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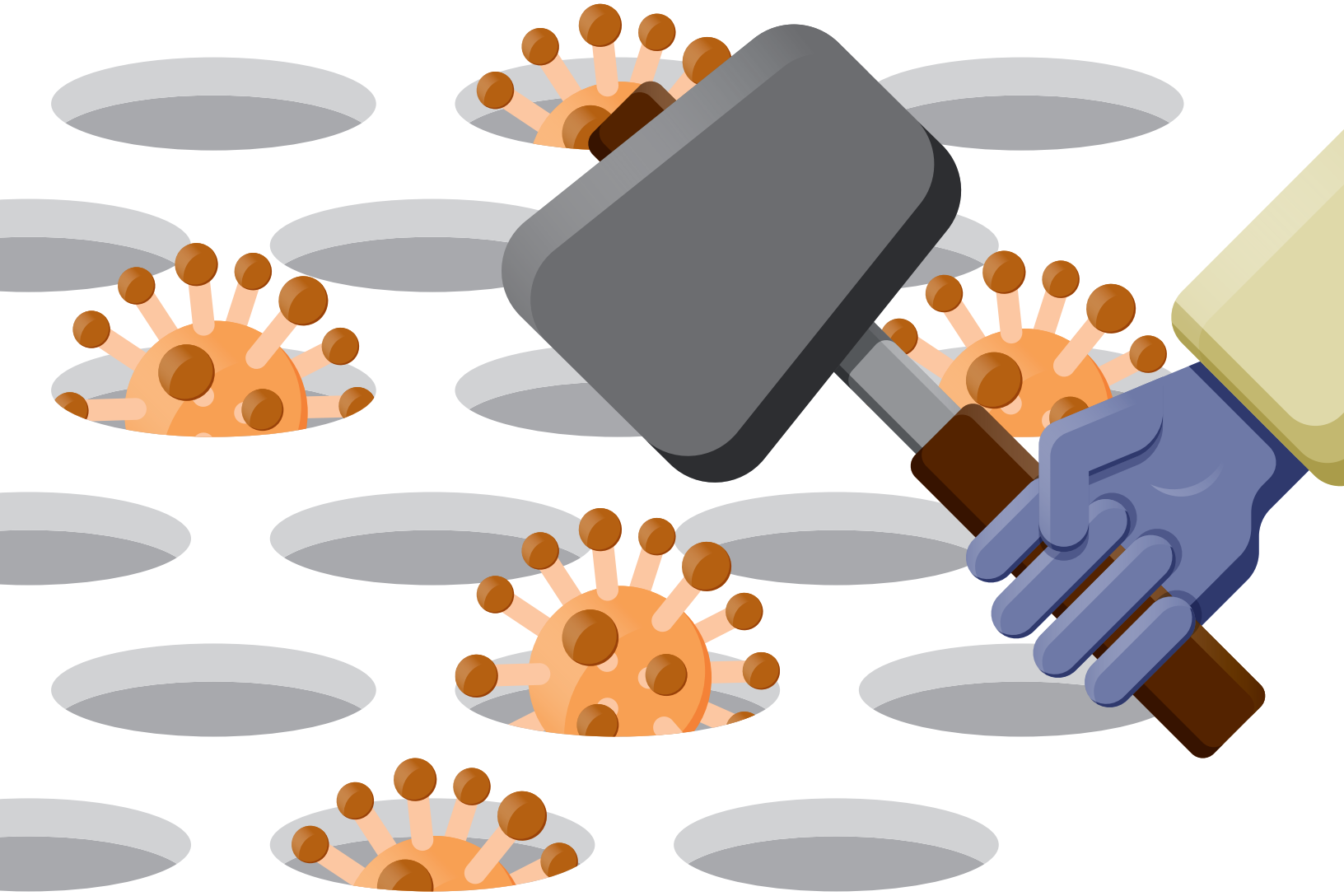
David Geffen School of Medicine

FALL 2020



COVID-19 CHRONICLES

Stories from the frontline of the pandemic.

A publication of
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COVID-19 Chronicles

The story of UCLA Health and the COVID-19 pandemic is too big to tell in one issue of *U* Magazine. To read more, click on the link to these articles at uclahealth.org/u-magazine.

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Dr. Judith S. Currier.
Photo: Courtesy of Dr. Judith S. Currier

Science Will Lead Us Out of This Pandemic

By Judith S. Currier, MD

Trust in scientific research and in our medical experts has shown us the way out of public health crises in the past, and it will do so again.

How did science become a pawn in the discourse over our national response to the COVID-19 pandemic? This is not how it should be — certainly not at a time when our country is in the midst of a health crisis, and trust in science and in medical experts is critical to help us to establish a plan to prevent and treat the consequences of the virus.

There have been distortion and denial from those who assert that the threat of SARS-CoV-2, the virus that causes COVID-19, is exaggerated and our response has been excessive. How, in the face of more than 206,000 American dead from this disease — *six times* the number of deaths from influenza in 2018-2019 — is it possible to minimize or deny the impact of the pandemic and reject common-sense strategies like universal masking and physical distancing that clearly have been shown to be effective in other countries?

Health care providers treating patients critically ill with COVID-19 know better. Caregivers on the front lines see the terrible cost of this pandemic every day and recognize its toll, not only in death and devastated lives, but also in economic upheaval for families and businesses. We understand the urgency of reopening and rebooting our economy, as well as the overwhelming desire of people to resume normal lives and once again be together with family and friends in public spaces without restrictions. We want that, too. But we also know that without a solid foundation of rigorous, evidence-based science to guide our decision-making about prevention and treatment, we will find ourselves back where we started. We have already seen that story unfolding in states and countries that have opted to reopen too soon or too quickly.

In the months since the start of the pandemic, we have made significant progress in the treatment of severe COVID-19

How, in the face of more than 206,000 American dead from this disease — *six times* the number of deaths from influenza in 2018-2019 — is it possible to minimize or deny the impact of the pandemic and reject common-sense strategies like universal masking and physical distancing that clearly have been shown to be effective in other countries?

disease in the hospital setting, but many challenges remain. It is through studies for the prevention and treatment of early disease conducted in the laboratory, in the field and in carefully constructed clinical trials that we will find our way out of this pandemic. I know from my experience as an HIV researcher that, at a time when thousands were dying and desperate for a cure, claims about certain drugs based on anecdotes or uncontrolled studies proliferated. But the progress we made toward finding effective treatment was the result of rigorous clinical trials coupled with direct engagement and input from the populations most affected by the disease. People with HIV now live healthy, normal lives as a result of research that has led to the availability of safe, well-tolerated and effective evidence-based treatment. The development of evidence-based prevention and treatment strategies utilizing science and research is also the formula that is necessary to meet the challenges of COVID-19.

There currently are more than 5,000 COVID-19 clinical studies in progress in the U.S. and around the world. Many of these trials have appropriately focused on hospitalized patients; however, there is now a national effort, under the Accelerating COVID-19 Therapeutic Interventions and Vaccines (ACTIV) Partnership, in collaboration with the AIDS Clinical Trials Group, to evaluate the safety and effectiveness of promising new agents to treat adults who have COVID-19 but have not been hospitalized. Finding effective therapies to treat COVID-19 early is vital to help us prevent transmission, hospitalization and advanced illness. The ACTIV partnership is designed to help us rapidly evaluate the most promising treatments to radically alter the current pandemic landscape. Along with other studies around the world, this research has the potential to save lives and reduce the suffering and disability caused by COVID-19, but only if communities trust the scientific process and volunteer to participate in these clinical trials. Misinformation about science and research breeds mistrust and threatens to undermine progress.

Science is not stagnant, and recommendations in response to the pandemic evolve based on new information. When this began, SARS-CoV-2 was a new virus about which we knew nothing. Early on it was thought that wearing a mask did little to hinder spread of the disease, but through scientific advances, we now know better. This does not mean that the science was wrong and, so, can't be trusted; it means that we acquired new knowledge, which has informed evidence-based recommendations. This should not erode public trust; it should enhance it.

Quality, high-impact research does not happen overnight. Even at the incredible speed with which vaccine trials are moving, an effective vaccine will be months away. That is why it remains essential that we take evidence-based measures like wearing a mask while in public and maintaining physical distancing as we wait for science to do its job.

Quality, high-impact research does not happen overnight. Even at the incredible speed with which vaccine trials are moving, an effective vaccine will be months away. That is why it remains essential that we take evidence-based measures like wearing a mask while in public and maintaining physical distancing as we wait for science to do its job.

This pandemic will be with us for many more months. Trust in scientific research and in our medical experts has shown us the way out of public health crises in the past, and it will do so again with this pandemic. Instead of attacking each other, we must come together to attack our common enemy, this virus that has killed so many of us, wreaked havoc on our economy and torn at the social fabric of our country. The scientific community and countless research volunteers have transformed the way we prevent and treat diseases like HIV, hepatitis C and cancer. We can do the same for COVID-19.

Dr. Judith S. Currier *is chief of the UCLA Division of Infectious Diseases and chair of the AIDS Clinical Trials Group.*

COVID-19: A Time for Creative Compassion

By Thanh H. Neville, MD '05 (RES '08, FEL '11), MSHS

Photo: Courtesy of the 3 Wishes Program

"His wife called every day to ask for updates, but she had not seen or spoken to him for the past week since he'd been intubated and transferred to the intensive care unit (ICU) for COVID respiratory failure. Seven days after his admission, we had to call her to say that he was coding and we were doing chest compressions. We called her again 15 minutes later to tell her that he was dead, and no, she could not come to see the body. He was 29 years old when he was admitted and 30 when he died a week later." As I listened to my critical care colleague's story of one of our first COVID deaths, I knew it broke her heart — as it did mine.

Although death is not an uncommon occurrence in the ICU, this is not the kind of death that health care workers at our institution, or any institution, are used to. As a critical care physician whose research interest is to improve the end-of-life experience in the ICU, this change nagged at my conscience, and I was shaken by this unexpected side effect of the COVID-19 pandemic. At our institution, I had founded a program called the 3 Wishes Program two years ago. The premise of the program is to make deaths in the ICU dignified and personalized by implementing small wishes for dying patients and their families; in turn, these acts of compassion have been shown to be uplifting and rewarding to the clinicians who implement them.

During this pandemic, I find myself yearning for the days when it was possible for clinicians to go "above and beyond" to fulfill final wishes. We have fulfilled a dying patient's wish to die outdoors at sunset, with his wife snuggled at his side, in the same hospital bed. We have hosted final holiday celebrations and bittersweet weddings with numerous loved ones in attendance. We have created precious hand-molds of a husband and wife holding hands for the last time, helped family members decorate a dying patient's room and given families locks of hair or fingerprints that become forever treasured.

None of these examples are now possible. COVID-19 has drastically changed the way patients die in hospitals due to the need for personal protective equipment (PPE) and visitor restrictions. Deaths are lonely, and at our hospital, the ability of clinicians to implement the 3 Wishes Program and to provide a compassionate and dignified death have become challenging. Most COVID-19 patients will die with no family at the bedside. And if not alone, it will be with an unrecognizable clinician whose eyes are barely visible through an armor of PPE. Items that previously could have been given as keepsakes are now considered contaminated and potentially infectious.



While the COVID-19 pandemic curtailed some activities of the 3 Wishes Program, others have resumed, such as creating word clouds (left) and hand molds (center, for non-COVID patients). The program creates fingerprint mementos (right) for all patients — but those for patients with COVID-19 must first be treated with UV irradiation — and can print and frame an EKG from the patient's medical records (opposite page) as a keepsake for the family.

Photos: Courtesy of the 3 Wishes Program

Despite these unprecedented challenges, I strongly believe that the combination of compassion, ingenuity and technology can help us get through these difficult times without losing our sense of humanity, particularly at our patients' end of life. I believe that we can continue to apply the philosophies of the 3 Wishes Program and patient-centered care, although differently.

At our institution, every patient's room has an iPad with HIPAA-compliant Zoom capabilities. Although the interface was originally cumbersome, I impressed upon our IT department the need for a mechanism that was user-friendly and did not increase health care workers' exposure, and changes were quickly made. During morning rounds, the last item on my ICU checklist was to make sure videoconferencing between patients and their families occurred once a day, even if it is just five minutes long, and the only thing that the family member can see is their loved one intubated, sedated and prone. I learned how to use the function myself and frequently did clinical updates with family members, while showing them their loved one during my daily examinations.

My heart is warmed when I learned that our nurses are also frequently asking family members what the patient's favorite music was, and I can hear it playing, even when I enter in full PPE. For the creation of keepsakes, I worked with infection control to develop a protocol in which fingerprints of dying patients can be safely obtained and subjected to UV germicidal irradiation (as we are doing to reuse our N95 masks). Once irradiated, these fingerprints are framed in keychains and sent to family members as final mementos. For a simpler but equally personal keepsake that does not require patient contact, we print an EKG from the patient's medical records and place it in a personalized frame before mailing it to the family.

My prior experience with the 3 Wishes Program has taught me that keepsakes serve as tangible reminders of the patient's existence and are a great source of comfort to family members; I can only imagine that they are even more meaningful during these times of isolation and separation.

The COVID-19 pandemic has changed our world in almost every aspect, but it does not get to change the fact that patients deserve — and health care workers want to deliver — compassionate care. As it is unlikely that things will "go back to normal" for the foreseeable future, compassion, creativity and solidarity will be essential for creating new ways to provide patient-centered care. For end-of-life care, the range of our capabilities has become restricted, but with a little effort and a lot of heart, we can still perform the small acts of kindness that we already know make a big difference.

Photo: Courtesy of Dr. Thanh H. Neville

Dr. Thanh H. Neville *is assistant professor of pulmonary and critical care medicine and medical director of the UCLA 3 Wishes Program.* *This article originally was published in the July 2020 issue of the* Journal of Palliative Medicine *and is reprinted by permission of Mary Ann Liebert, Inc.*

For more information about the 3 Wishes Program, go to: uclahealth.org/3wishes

To view a CBS2/KCAL9 Los Angeles story about the UCLA 3 Wishes Program, go to: tinyurl.com/cbs-la-3-wishes

From My Heart to Yours: Letters from the Chemo Chair

The first day of chemotherapy treatment can ignite feelings of anxiety, sadness and loneliness, and under usual conditions, patients with cancer are encouraged to bring a friend or family member with them to help them through the ordeal. But the COVID-19 pandemic has altered that framework, necessitating safety measures in outpatient cancer-treatment clinics that preclude patients from having loved ones physically with them while they are receiving chemotherapy.

To address the isolation of patients going through treatment alone under the physical-distancing guidelines, the Simms/Mann UCLA Center for Integrative Oncology has spearheaded a project in which cancer survivors write anonymous letters of hope, wisdom, comfort and encouragement to new patients. "Even if they aren't physically there, your friends, your family, your loved ones *are* with you through this, sending love, sending prayers, sending healing energy your way," one survivor wrote. "And I want you to know that, in my way I am with you too, as are many others who have been through this before you."

They also offer tips based on their experience: "Bring with you some of the comforts of home — a favorite quilt, cozy socks (you know, those fluffy ones?), snacks you enjoy, something to read, or music to listen to," another survivor wrote. "Cry if you need to, but laugh when you can," wrote another. Each survivor also offers a song that served as a source of inspiration for them. The letters have been compiled into a booklet that is presented to patients — along with a link to a playlist of the inspirational songs (The Beatles' "Here Comes the Sun," "Bridge Over Troubled Water" by Simon & Garfunkle and "You Will Be Found" from the musical *Dear Evan Hansen*, among them) that can be accessed through the center's website — on their first day of chemotherapy at UCLA Health's 16 hematology/oncology outpatient clinics throughout Southern California.

"From the Chemo Chair: From My Heart to Your Heart" was the brainchild of Sydney Siegel, MSW, a Simms/Mann psycho-oncology MSW fellow. "As clinicians who work with patients and family members undergoing cancer treatment, we have spent a great deal of time in the infusion space and are very familiar with how scary and overwhelming those first appointments are — and how much having the presence of loved ones makes it tolerable," says Kauser Ahmed, PhD, director of the Simms/Mann Center.

"Starting cancer treatment can be frightening for patients," says John A. Glaspy, MD, MPH, Simms/Mann Family Foundation Chair in Integrative Oncology and director of the clinical research unit at the UCLA Jonsson Comprehensive Cancer Center. "Bringing a family member or friend to the visit helps to allay fears and promote peace of mind, but COVID-19 has taken that away from us. This project is a way for prior patients to extend a hand to incoming patients — a chance for these new patients to hear from someone who knows what it takes to get through it and who can offer reassurance and show that there is a light at the end of the tunnel. Humans are social animals, and most of us deal better with anxiety and fear in small groups than we do alone."

"From the Chemo Chair" epitomizes the mission of the Simms/Mann Center, a multidisciplinary, integrative center providing whole-person care that addresses the physical, psychological and spiritual needs of cancer patients and their families. "We view patients not just as a diagnosis or set of symptoms, but also as complex beings," Dr. Ahmed says. "We try to help them tap into their own sense of resilience and meaning and to understand that support is not a sign of weakness but a way to empower them as they go through this journey."

— Dan Gordon

For more information about the From the Chemo Chair project and to listen to the playlist, go to: simmsmanncenter.ucla.edu/letter-writing-project

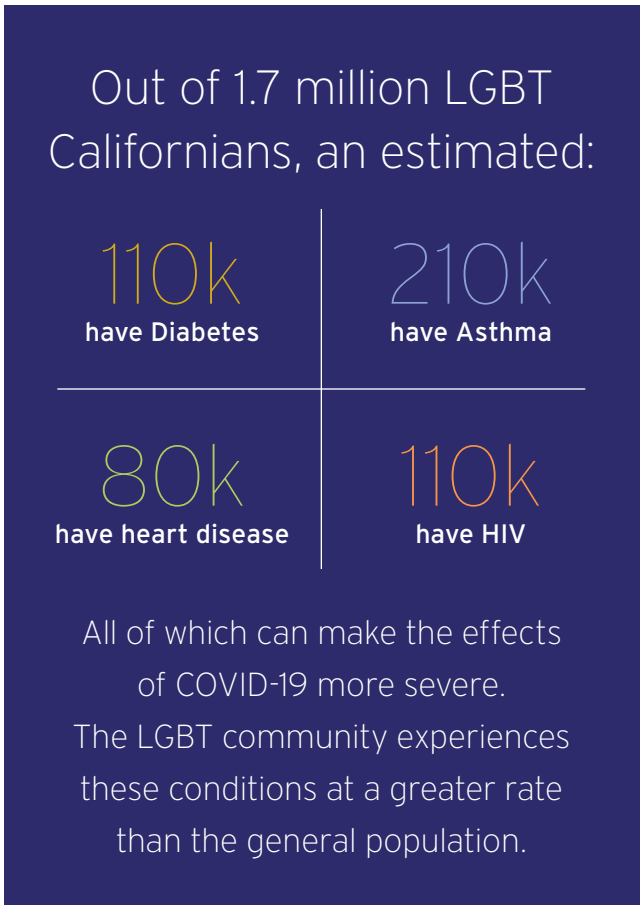
For more information about the Simms/Mann UCLA Center for Integrative Oncology, go to: simmsmanncenter.ucla.edu

Illustration: Uma

Preexisting Conditions, Poverty, Discrimination Raise COVID-19 Risk for LGBT Community

More than 200,000 LGBT adults in California have medical conditions that increase their vulnerability to the effects of COVID-19, according to new research by Kathryn O'Neill, a policy analyst with the Williams Institute at the UCLA School of Law.

O'Neill found that of 1.7 million LGBT Californians, an estimated 210,000 have asthma, 110,000 have diabetes, 80,000 have heart disease and 110,000 have HIV — all of which can make the effects of COVID-19 more severe. "The LGBT community experiences these conditions at a greater rate than the general population," O'Neill says. "A lot of previous research exists that shows this population is at heightened risk in various realms. That includes an increased likelihood of poverty, especially among certain groups, like bisexual women or transgender people."



O'Neill found that as of 2018, about 612,000 LGBT Californians were already living with incomes below 200 percent of the federal poverty level, about 140,000 were unemployed and more than 300,000 faced food insecurity. "All of those figures are likely getting worse now, since about 814,000 were working in industries that recently experienced dramatic pandemic job losses, such as health care, construction, hospitality and retail," she says.

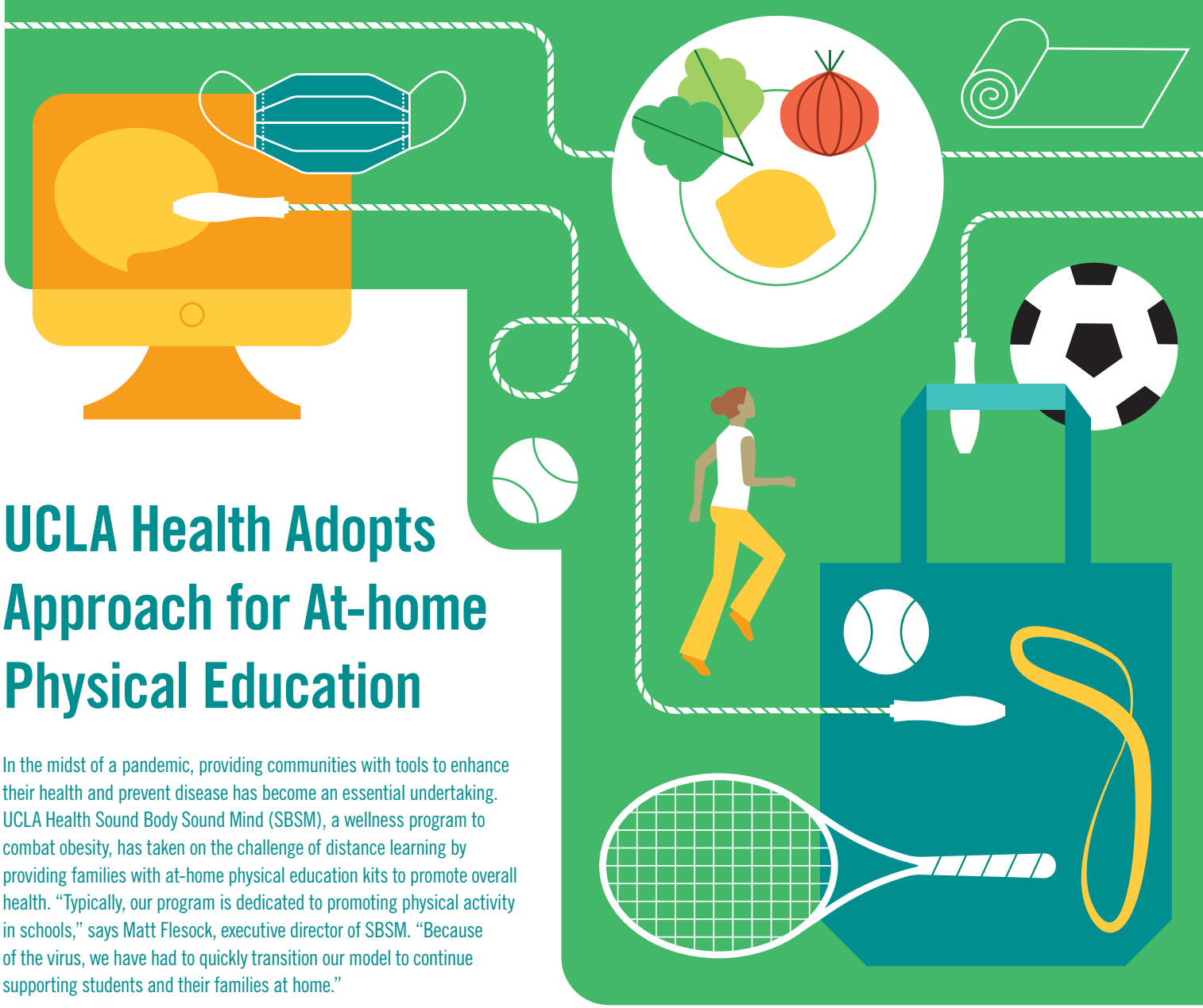
Using data from the UCLA Center for Health Policy Research's annual California Health Interview Survey, O'Neill found that 134,000 LGBT Californians lack health insurance. "A large proportion of the LGBT population has trouble paying medical bills for themselves or their family," O'Neill says. "Cost, lack of insurance and other insurance-related reasons caused 150,000 LGBT Californians to delay or skip needed medical care."

Discrimination also can prevent LGBT individuals from accessing health care. O'Neill notes that in a separate study, the U.S. Transgender Survey, one-third of transgender people reported having a negative experience the last time they got medical care. "Fortunately, California has state laws which protect LGBT people from discrimination," O'Neill says. "But in the 28 states without those protections, the Trump administration is essentially allowing people to discriminate against transgender people, and that increases the harm they will experience when trying to get health care in the middle of a pandemic."

O'Neill hopes her report will lead to interventions that keep these data in mind. She also urges emergency-response organizations and those providing resources during the pandemic to reach out to LGBT people and ensure that they are inclusive and welcoming. "We need to help those who are vulnerable, but it's best not to have a one-size-fits-all approach," O'Neill says.

She notes that there is a general lack of data on the impact of discrimination in the LGBT community. "My professional work centers on poverty and inequity," O'Neill says. "At the Williams Institute, we all started strategizing the first week of quarantine about projects that would be helpful at this moment in history. Looking at variables exposing people to harm from coronavirus was an obvious choice."

— Alison Hewitt



UCLA Health Adopts Approach for At-home Physical Education

In the midst of a pandemic, providing communities with tools to enhance their health and prevent disease has become an essential undertaking. UCLA Health Sound Body Sound Mind (SBSM), a wellness program to combat obesity, has taken on the challenge of distance learning by providing families with at-home physical education kits to promote overall health. "Typically, our program is dedicated to promoting physical activity in schools," says Matt Flesock, executive director of SBSM. "Because of the virus, we have had to quickly transition our model to continue supporting students and their families at home."

Illustration: Maja Moden

In April, SBSM staff worked with educators to create nine weeks of lessons for teachers transitioning to online instruction. Five school districts received weekly digital packets with workouts, nutrition lessons and tools for boosting mental wellness. "We combined workouts from our curriculum and found additional ways to keep students active while meeting the state's educational standards," Flesock said.

Access to fitness equipment varies across districts. Unlike textbooks and Chromebooks, physical education departments have no at-home equivalent for students. With support from a network of partners, SBSM has committed more than 4,000 take-home PE kits to some of the communities in the Los Angeles area with the highest needs. In partnership with local organizations, students received recyclable tote bags filled with rackets and tennis balls, Frisbees, face masks, yoga mats, resistance bands, jump ropes, balls and more.

Inactivity coupled with social isolation can have damaging effects on youth. A study in *The Lancet* has shown that adolescents are experiencing more anxiety and depression than ever before, they are more lonely and sedentary, and they are spending more time indoors. "These trends are extremely alarming for us and can set youth back in many ways," Flesock says. "It is important that we continue to find ways to support our communities."

For some families, balancing life's priorities with healthy meals, physical activity and quality sleep can feel like a luxury. Part of SBSM's goal is to equip teachers with tools that students can use independently or with family members. "In our at-home PE kits, we've included many bilingual resources that emphasize both movement and food preparation for healthier meals to support the immune systems of family members," Flesock says.

Through the SBSM program, students are exposed to a more rigorous physical education, with resources to keep them engaged and challenged, whether in school or at home. "I think we will see that the students who kept a physical routine going while at home will be more resilient and have a higher quality of life," Flesock says. "Our staff saw a need in our communities, we answered the call, and I know our kids will be better because of it."

— Jocelyn Apodaca

For more information about UCLA Health Sound Body Sound Mind, go to: uclahealth.org/soundbodysoundmind

Relaxed Too Soon, Physical-distancing Measures May Be for Naught

Relaxing physical-distancing measures in the United States while there is still no COVID-19 vaccine or treatment could result in about the same number of infections as if distancing had never been implemented to begin with, according to a UCLA-led team of mathematicians and scientists.

Image: iStock Photo

The researchers compared the results of three related mathematical models of disease transmission that they used to analyze data emerging from local and national governments early in the pandemic, including one that measures the dynamic reproduction number — the average number of susceptible people infected by one previously infected person. The models all highlight the dangers of relaxing public health measures too soon.

"Distancing efforts that appear to have succeeded in the short term may have little impact on the total number of infections expected over the course of the pandemic," says lead author Andrea Bertozzi, PhD, Distinguished Professor of Mathematics and holder of the Betsy Wood Knapp Chair for Innovation and Creativity in the UCLA College. "Our mathematical models demonstrate that relaxing these measures in the absence of pharmaceutical interventions may allow the pandemic to reemerge. It's about reducing contact with other people, and this can be done with personal protective equipment as well as distancing."

If distancing and shelter-in-place measures had not been taken in March and April, it is very likely the number of people infected in California, New York and elsewhere would have been dramatically higher, posing a severe burden on hospitals, Dr. Bertozzi says. But she notes that while short-term distancing can slow the spread of the disease, it may not result in fewer people becoming infected when not sustained.

Mathematically modeling and forecasting the spread of COVID-19 are critical for effective public health policy, but wide differences in precautionary approaches across the country have made it a challenge, says Dr. Bertozzi, who also is Distinguished Professor of Mechanical and Aerospace Engineering. Social distancing and wearing face masks reduce the spread of COVID-19, but people in many states have not followed distancing guidelines or worn masks — and the number of infections has continued to rise.

During the 1918 influenza pandemic, social distancing was first enforced and then relaxed in some areas. Dr. Bertozzi points to a study published in *Proceedings of the National Academy of Sciences* in 2007 that looked at several American cities during that pandemic where a second wave of infections occurred after public health measures were removed too early.

That study found that the timing of public health interventions had a profound influence on the pattern of the second wave of the 1918 pandemic in different cities. Cities that had introduced measures early in the pandemic achieved significant reductions in overall mortality. Larger reductions in peak mortality were achieved by those cities that extended the public health measures for longer. St. Louis, Milwaukee and Kansas City, for instance, had the most effective interventions, reducing transmission rates by 30-to-50 percent.

"During the 1918 influenza pandemic, the early relaxation of social-distancing measures led to a swift uptick in deaths in some U.S. cities," Dr. Bertozzi says. "Our mathematical models help to explain why this effect might occur today."

— Stuart Wolpert

"The Challenges of Modeling and Forecasting the Spread of COVID-19," *PNAS*, April 15, 2020

WALL-E's Little Brother Lands at UCLA Mattel

With its big WALL-E eyes and sleek plastic body, Robin the robot has the huggable, child-friendly look of an animated Pixar character — one that is eager to interact with pediatric patients at UCLA Mattel Children's Hospital to ease their anxiety and loneliness. The emotional-learning technology that enables Robin to engage realistically with children is even more essential in the wake of the COVID-19 pandemic, during which physical isolation has become all the more important for sick children, particularly those whose immune systems are compromised.

But while physical isolation is necessary, the feeling of being isolated is not, says Dr. Justin P. Wagner, MD (RES '17), a UCLA pediatric surgeon and co-leader of the Robin project. "Negative feelings are even stronger during this time," Dr. Wagner says. "We hope to integrate Robin as a member of the team, augmenting our ability to give children contact, attention and companionship."

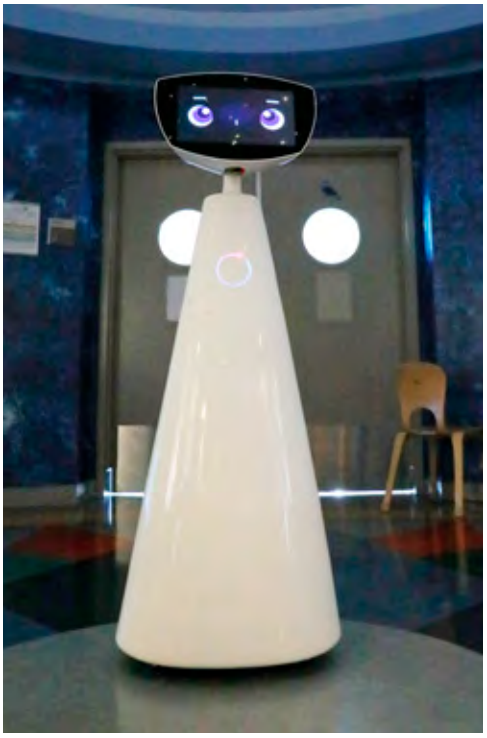
The artificial intelligence system was developed by Expper Technologies, a Silicon Valley–supported startup with roots in Yerevan, Armenia. Robin's technology enables the robot to build what is called associative memory — it recognizes a child's emotions by interpreting his or her facial expressions and builds responsive dialogue by replicating patterns formed from previous experiences.

Robin has been zipping along the halls of the hospital since mid-July and will go through a yearlong training period during which it will be remotely operated by a specialist from the hospital's Chase Child Life Program. The specialist will provide Robin's voice and control the robot's actions and expressions as it "learns" how to respond to the needs of children and families.

"This is another tool in our toolbox to provide developmental and coping support for our young patients," says Kelli Carroll, director of the Chase Child Life Program. "While our traditional interventions are on pause during the pandemic, the need remains to prepare, educate and provide behavioral distraction for children. Robin will help our specialists do that."

In addition to providing emotional support for pediatric patients, Robin will be the subject of a study by a multidisciplinary team of medical and behavioral specialists that will assess the robot's impact on children and families. The goal is to determine how well this new technology helps both children and parents to cope with the stresses of being hospitalized. "The ability to provide our pediatric patients with this type of social companionship is very compelling, particularly during this pandemic," says Shant Shekherdimian, MD (RES '12), a UCLA pediatric surgeon and co-leader of the project. "We also knew that by bringing Robin to UCLA, our team of clinicians and researchers would work tirelessly to improve this technology and make it an even more powerful tool."

— Jane Murcia



Robin the robot utilizes emotional-learning technology to engage realistically with children to ease their anxiety and loneliness while in the hospital, something that is even more essential in the wake of the COVID-19 pandemic.

Photos: UCLA Health

Coronavirus Antibodies Fall Dramatically in First 3 Months after Mild Cases of COVID-19

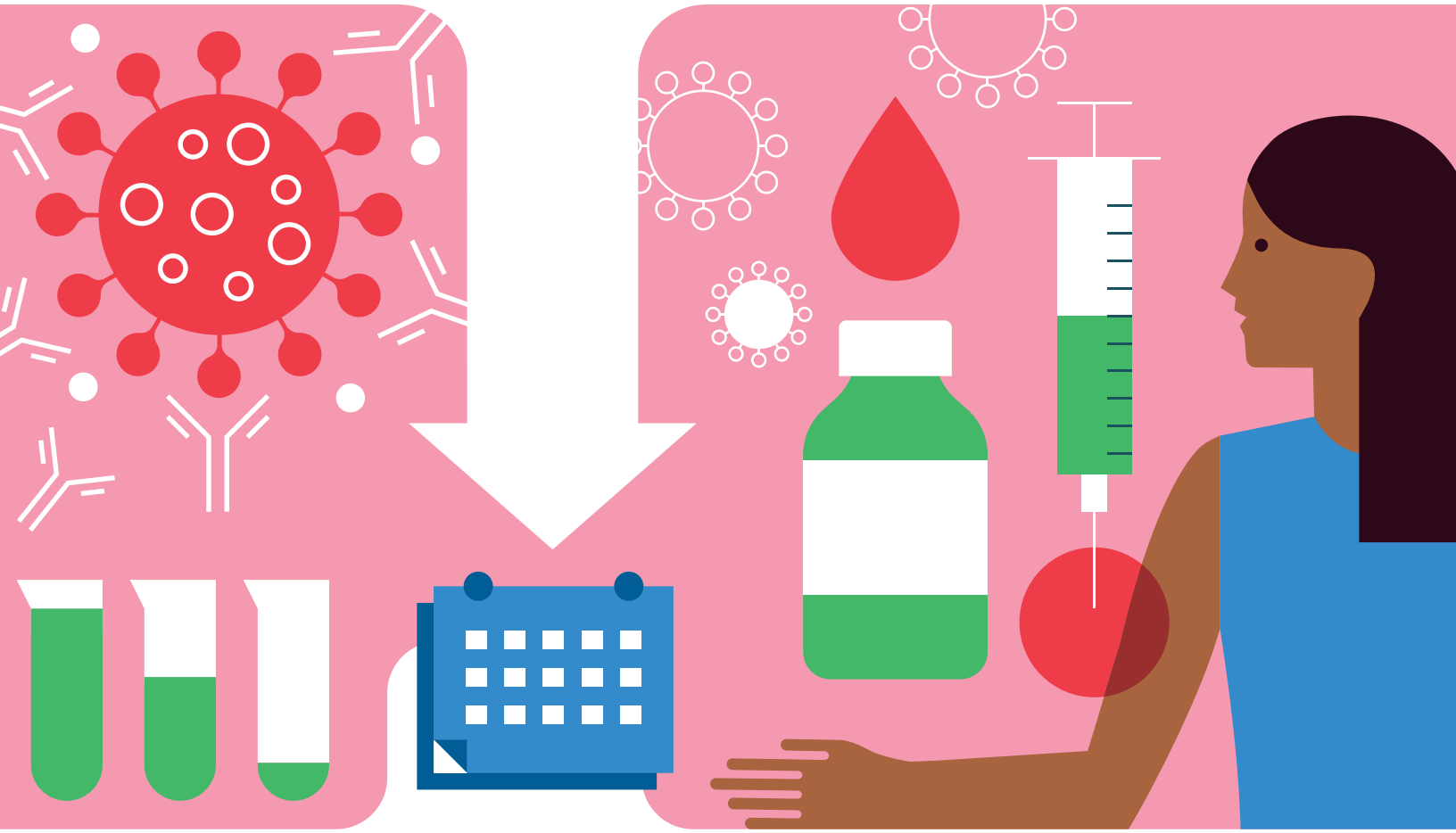


Illustration: Maja Moden

A UCLA study shows that in people with mild cases of COVID-19, antibodies against SARS-CoV-2 — the virus that causes the disease — drop sharply over the first three months after infection, decreasing by roughly half every 36 days. If sustained at that rate, the antibodies would disappear within about a year.

The findings raise concerns about antibody-based "immunity passports," the potential for herd immunity and the reliability of antibody tests in estimating past infections. In addition, the findings may have implications for the durability of antibody-based vaccines.

Previous reports have suggested that antibodies against the novel coronavirus are short-lived, but the rate at which they decrease had not been carefully defined. This was the first study to carefully estimate the rate at which the antibodies disappear. The researchers studied 20 women and 14 men who recovered from mild cases of COVID-19. Antibody tests were conducted at an average of 36 days and 82 days after the initial symptoms of infection.

— *Enrique Rivero*

"Rapid Decay of Anti–SARS-CoV-2 Antibodies in Persons with Mild Covid-19," *NEJM*, July 21, 2020

Statin Usage Linked to Lower Death Rate in Hospitalized COVID-19 Patients

Patients hospitalized with COVID-19 who take statin drugs are less likely to die and less likely to need mechanical ventilation than those who don't take the cholesterol-lowering drugs, according to a study led by Chinese researchers in collaboration with UCLA's Yibin Wang, PhD, professor of molecular biology.

Among two groups of COVID-19 patients with matching clinical characteristics other than statin usage, hospitalized patients taking statins had a 5.2 percent mortality rate, compared with a 9.4 percent mortality rate for patients not taking statins. Statin use also was linked to lower levels of inflammation, as well as a lower incidence of acute respiratory distress syndrome and admission to intensive care units.

Dr. Wang notes this is the first time a link has been observed between statin use and COVID-19 mortality based on a large-scale retrospective group analysis. The study also found that patients taking statins showed a comparably lower risk of dying or suffering other negative outcomes whether or not they were taking one of two classes of blood pressure-lowering drugs — angiotensin-converting enzyme (ACE) inhibitors and angiotensin II receptor blockers (ARBs).

Repurposing existing approved drugs is viewed as an important interim strategy until the development of a vaccine or drug to effectively prevent or treat severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, which causes COVID-19. Statins are cholesterol-lowering drugs associated with a very good safety profile, low cost and potent anti-inflammatory effects, suggesting they could be beneficial to counter SARS-CoV-2 infection. In the clinic, they often are prescribed along with ACE inhibitors and ARBs for individuals with high blood pressure or cardiac pathologies.

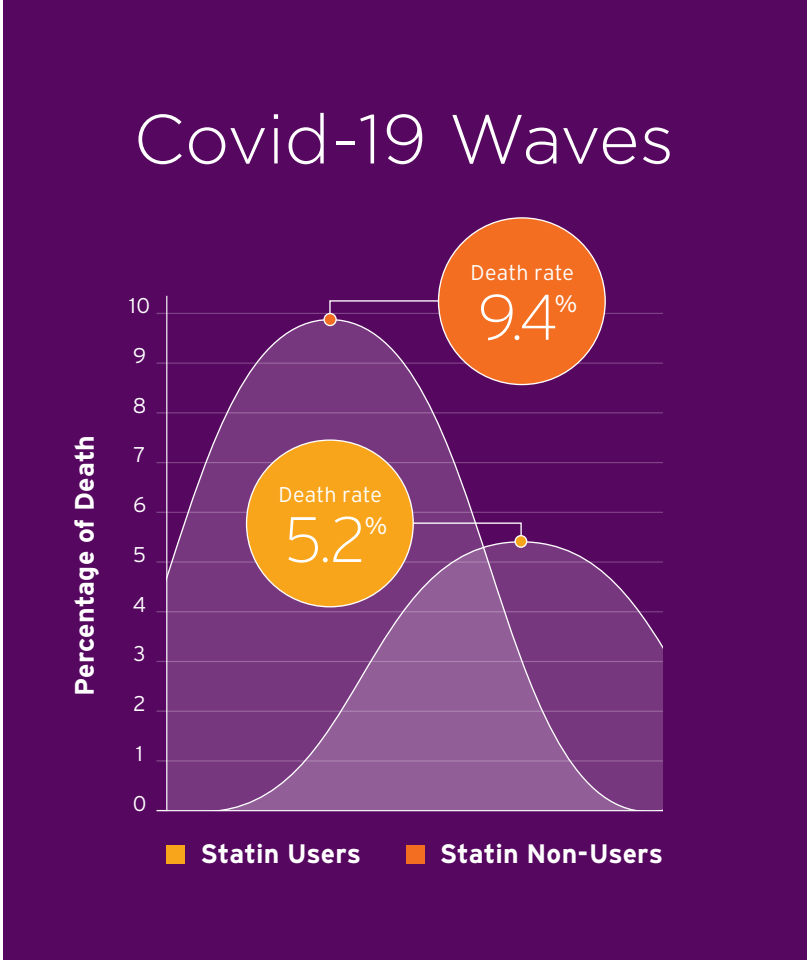
Earlier this year, the same group of researchers reported that people with COVID-19 taking ACE inhibitors and ARBs were at a lower risk of mortality than those not treated. Despite this, there were some concerns about the benefits of these drugs in COVID-19 patients, because animal studies had shown that statins, ACE inhibitors, and ARBs increase the expression of angiotensin-converting enzyme II (ACE2), the receptor that SARS-CoV-2 uses to infect host cells. Thus, a closer look was needed to determine how clinical outcomes in patients with COVID-19 could be affected by the use of statins, either alone or in combination therapy.

The researchers looked back at the records of 13,981 COVID-19 patients admitted to 21 hospitals in Hubei Province, China. Of those patients, 1,219 were given statins for an average of 25 days during hospitalization. Among patients with hypertension, 319 used statins combined with ACE inhibitors or ARBs, and 603 used statins combined with other antihypertensive drugs. The researchers analyzed mortality rates as well as secondary outcomes, including the need for mechanical ventilation, admission to intensive care units and acute respiratory distress syndrome. They also measured the levels of three inflammation biomarkers – circulating C reactive protein, interleukin 6 and neutrophil counts – selected to represent the overall status of systemic inflammation in the body.

Because participants receiving statins were older and had a greater incidence of medical conditions such as hypertension, lung lesions, and diabetes, the researchers analyzed patients who were matched for baseline characteristics such as age, disease severity, and preexisting conditions.

The results of the study, Dr. Wang says, support the potential benefits of statin use in hospitalized patients with COVID-19 and show the safety of proceeding with future studies involving statins for the treatment of COVID-19.

— Sandra Capellera Garcia



For patients with COVID-19 who have a preexisting condition such as hypertension or a metabolic disorder, the death rate is as high as 9.4 percent, but for patients with matched preexisting condition profiles but who were treated with a statin medication, the death rate was almost 60 percent lower.

Graphic Data: *Cell Metabolism*

"In-hospital Use of Statins Is Associated with a Reduced Risk of Mortality among Individuals with COVID-19," *Cell Metabolism*, August 4, 2020

Medical Education in a Post-COVID World

The pandemic has changed so much of the world we have known, including how we will train the next generations of physicians and physician-scientists.

Kelsey C. Martin, MD, PhD

Dean, David Geffen School of Medicine at UCLA

Clarence H. Braddock III, MD, MPH

Vice Dean for Education, David Geffen School of Medicine at UCLA

When the COVID-19 pandemic hit, in-person classes stopped and clinical rotations were canceled. The leadership and faculty of the David Geffen School of Medicine at UCLA had to find new ways to teach a discipline that is inherently hands-on. While the pandemic will pass, the ripples of its impact will be felt for years, perhaps decades, to come. Drs. Kelsey C. Martin, dean of the David Geffen School of Medicine at UCLA, and Clarence H. Braddock III, vice dean for education, spoke with *U* Magazine editor David Greenwald about how the pandemic affected students and what it will mean for medical education in the future.

An op-ed in the Journal of the *American Medical Association* stated: "The profound effects of COVID-19 may forever change how future physicians are educated." Do you believe that to be the case?

Dr. Clarence H. Braddock III: The COVID-19 pandemic has underscored how important it is for physicians to understand contagion. Over the past 15 or 20 years, we've had more than a few unusual viral contagion events — SARS, MERS, H1N1, Ebola. Going forward, physicians need to have a greater knowledge of how to practice medicine during a contagion, not just in the treatment of the disease, but also knowing how to diagnose these diseases and how to safely deliver care and understanding the modes of transmission for these illnesses. I think this also will alter the modalities of teaching. Higher education in general, and medical education in particular, has been very resistant to thinking about different modalities of teaching and learning, particularly such things as distance learning and remote asynchronous learning. But the pandemic has forced us to find ways to teach that are effective, even if we are not able to all be together in the same space. I think we are going to see a greater recognition that there may, in fact, be some advantages to distance learning.

Dr. Kelsey C. Martin: It has forced innovations in how we use technology to teach. It also has raised consciousness about the important role of public health in medicine. We've always known that public health and prevention are critical, but the close ties between public health and medicine are front and center right now. And the pandemic has highlighted the incredible importance and value of biomedical research as we look to identify cures and new treatments, really understand this pandemic and develop approaches to address not just SARS-CoV-2, but also future infectious agents.

Dr. Braddock: As a country, we have struggled in recent years with a declining trust in science, and it's been remarkable how difficult it has been to manage a contagion like this when so many people in our society lack confidence in the views of experts. It's mind-boggling, really. But it's also a clarion call, telling us that we have to figure out a way to bridge

Drs. Kelsey C. Martin and Clarence H. Braddock III.

Photos: Ann Johansson

that divide. As physicians and scientists, we need to figure out how to regain that trust. If we had had that, I think we'd probably be in a much better place than we are now. We also must have a much better understanding of the determinants of health. This pandemic has put a very harsh light on disparities in access to care, hitting communities of color and of lower socioeconomic status much harder. We have to understand the socioeconomic and structural conditions under which people live that directly affect their health.

Dr. Martin: It's an unbelievable lesson for trainees right now.

What role, then, should public health play in the education of medical students going forward?

Dr. Braddock: There will be much greater alignment. Medical training has tended to focus on what do you do to bring the best evidence-based care to the patient in front of you; public health is about what do you do to bring the best evidence-based approaches to support the health of communities. Those two things are connected, right? But in medicine, we haven't thought about that second thing very much. Having a very intentional theme throughout the new curriculum that we are implementing on social and structural determinants of health, ranging from prevention to thinking about poverty, housing inequality, all these factors, will be very much at the forefront.

Dr. Martin: This pandemic has created an opportunity for the deans of all of UCLA's health sciences schools to work very collaboratively together. One of the efforts that we've been engaging in for years is to try to promote more inter-professional education. A physician doesn't work by herself or himself in the field; they work as part of a team. We are looking at how we can model that in the early stages of medical education. And over the past months, the deans of the nursing school, the dentistry school and the school of public health and I all have been talking about how are we going to have our students re-enter the clinical arena, how are we going to manage their clinical education. Those discussions have enabled us to identify some opportunities where we could develop more inter-professional educational activities.

What did the pandemic do to the experience of current students?

Dr. Braddock: When clinics cut back and non-emergency surgeries were postponed so the health system could focus its efforts on delivering care

"This pandemic has created an opportunity for the deans of all of UCLA's health sciences schools to work very collaboratively together. ... A physician doesn't work by herself or himself in the field; they work as part of a team. We are looking at how we can model that in the early stages of medical education."

"This is a critical moment, and we have to do whatever we can to inspire our students and to support them in any ways that we can to make sure they are successful in their training. The need to prepare future physicians has never been as essential as it is now."

to patients with COVID-19, students who were on their clinical rotations had to leave the clinical environment and all of their education had to be done remotely. It's a little hard to imagine that we could teach pediatrics and surgery and general medicine via Zoom, but that is what we were doing within just a few weeks. Going forward, we have to figure out how to do the parts of medical education that do require students to be physically present in the hospital or clinics or labs. That is something we have to do, otherwise we will not be appropriately training the future workforce. Those are concrete impacts. Then there are existential impacts, such as how students today are going to think about their work in relation to the risk that always has come with being a physician. A certain level of risk is part of the ethos of medicine; you know that, and of course you want to mitigate it, but you accept it. But in this current pandemic, that sense of risk definitely is heightened, and many of our learners are struggling with that. There is apprehension, particularly among those who are relatively new to a clinical environment. But even those who are somewhat veterans in the clinical environment are apprehensive about how they are going to meet their ethical commitments of being a physician in the face of elevated risk.

Dr. Martin: I think one way to respond to that is for us to utilize resources like our simulation center to help train students in things like how to use PPE correctly to prepare them for when they are put in a situation where there might be some risk. There's also been a significant impact on the career trajectory of students. All of our interviews for incoming students are being done remotely. Fourth-year students often go to other institutions for clerkships to see if it is a place where they might want to go for their residency, but they aren't able to do that this coming year because of travel and quarantine restrictions. Board exams have been delayed. The MCATs have been delayed. So, in a career where there are many steps and hurdles that one has to overcome, there now is an added layer of uncertainty. This is a critical moment, and we have to do whatever we can to inspire our students and to support them in any ways that we can to make sure they are successful in their training. The need to prepare future physicians has never been as essential as it is now.

What will the new academic year look like?

Dr. Martin: It will be unlike any other. In response to the challenges posed by COVID-19, our curricular affairs team has designed and executed a hybrid educational model that prioritizes safety while enabling essential in-person learning experiences. Our orientation for incoming students was entirely virtual and focused on community building and the adverse health effects of structural racism. Our first-year students are attending in-person sessions in accordance with carefully laid out safety protocols. For all sessions that do not have a critical hands-on component, students are learning remotely. To minimize density on campus, second-year students can opt-out of all in-person instruction or engage in the hybrid model. Geffen Hall may not be bustling with its usual campus activities, but our innovative spirit continues to unite and uplift our medical school.

How did students respond to the pandemic?

Dr. Braddock: When students realized what was happening, there was a spirit of altruism and an eagerness to help and contribute in some way that was deeply powerful and moving. A group of students got together and formed what they called the L.A. COVID Volunteers to organize a childcare network for health care workers who were on the frontline. And these same medical students connected with students and faculty in the engineering school who were using 3D printers to make the parts for plastic face shields, and our students set up a face-shield assembly operation in Geffen Hall. We know as leaders of the medical school that when you select students to enter, they have altruism and commitment to service, but to see it blossom that way in a situation like this — it is nothing short of inspirational.

Dr. Martin: You see students whose whole training has been turned upside down, and they are finding ways to be a part of the solution and to contribute in any way they can — it was inspiring and heartwarming. It filled me with hope.

Has the pandemic marked a turning point for students in how they think about their future careers?

Dr. Martin: I think it is the combination of the pandemic and the killing of George Floyd, and the

movement has drawn needed attention to structural racism in our country and how that intersects with COVID-19 and with health disparities. I do believe that it's been a turning point for not just students, but also for our house staff, our faculty, our physician-scientists and scientists. I think there is much more thought now about what we need to do differently to make sure that there is real equity in health care. I think it is a moment when there will be a change finally.

Dr. Braddock: I agree. That juxtaposition has had a profound impact, and many people are thinking quite differently about what role the issue of addressing racism will play in their career. I hope that is something that is going to reverberate for a long time.

Is there a teachable moment in this?

Dr. Martin: Yes, I think the teachable moment has been in how we stay flexible and adapt to uncertainty and a situation in which we are not completely in control.

Dr. Braddock: Sometimes, when you have a moment of crisis, it brings with it a certain clarity of focus and purpose that's quite remarkable.

Are you hopeful?

Dr. Martin: I'm realistically hopeful. Certainly, I am distressed by all the suffering that's been going on, and I'm discouraged by the fact that we're not able, on a national level, to manage this pandemic in a way that is ideal, but I'm hopeful because there's such an acknowledgment of the need for change, and there's such an acknowledgment that we need to figure out ways to work together to identify effective testing strategies, effective public health measures, effective therapies for COVID-19 and that we are, I hope, going to address some of the more chronic issues in society that have become so apparent during this time. I naturally am an optimist, so I really do believe that human beings — and this is very true of the David Geffen School of Medicine and our faculty and our students and trainees — have the creativity, the brilliance and the commitment that are required to address these issues.

Dr. Braddock: The thing about a large crisis is that it brings out both our better angels and our worst demons, and we've seen a little bit of both. The lack of coordinated response, the polarization that has gone on, those things have been very discouraging. But then you see how people step up to the challenge and commit themselves to doing the work that needs to be done. As Dean Martin said, we see it in our faculty and in our students and our trainees — the students who volunteer to do childcare, the researchers who are champing at the bit to get back in the lab to start working on therapies and cures, our infectious-diseases specialists who have been working tirelessly to advise us and keep everyone safe, our trainees and faculty and nurses who have been putting on their PPE every day to care for patients — everyone pulling together in whatever way they can to help and to try to make things better. Our better angels emerge, and they transcend our worst demons, and that is what gives me hope.

> "You see students whose whole training has been turned upside down, and they are finding ways to be a part of the solution and to contribute in any way they can — it was inspiring and heartwarming. It filled me with hope."

Vaccine Hunter

Gay M. Crooks, MBBS

Rebecca Smith Professor of Pathology & Laboratory Medicine
Co-Director, Eli and Edythe Broad Center of Regenerative Medicine and Stem Cell Research at UCLA
Director, Jonsson Comprehensive Cancer Center Cancer and Stem Cell Biology Program

In normal times, developmental immunologist Dr. Gay Crooks's research focuses on how human hematopoietic stem cells can be isolated and manipulated to boost the body's immune response to attack cancer cells. Now, she and colleagues in her laboratory are redirecting their expertise to studying which parts of the COVID-19 virus might trigger the strongest T-cell response and be most useful in developing an effective vaccine.

Dr. Crooks steps into the *U* Magazine spotlight.

When did you start to think about science?

I loved science in elementary school, but I actually came to it, in terms of my laboratory research career, late in the game. I trained in Australia as an MD and then came to the United States for a fellowship in pediatric hematology/oncology primarily because there was a research component. Research is missing from medical training in most other countries, so I had very little exposure to it during my MD. And I found that I loved it! I thought I would come to the U.S. for a couple of years and then go back to Australia to be a physician, but I found that generating data in the lab was intoxicating.

What has been the greatest challenge in your current work?

The shutdown of research during the pandemic, without a doubt. Initially, it was an almost complete shutdown, and only a small number of people could come to the lab, just for essential reasons. Research is starting to ramp back up, but there is a limit on how many can be in the lab at any time. And the physical-distancing requirements essentially make it impossible to train anyone new. It is ironic that the nature of the pandemic has made finding a solution to it more difficult.

When you're not in the lab working to facilitate development of a vaccine against COVID-19, where are you happiest?

In my garden. A few years ago, we converted our garden into all drought-tolerant plants and really put a lot of effort into the process. It is full of mostly native California plants — and also some Australian plants — and natural wildlife and monarch butterflies and dragonflies and lizards, and it's a joy to spend time there.

Who's been your most important collaborator in the work to facilitate a COVID-19 vaccine?

Dr. Christopher Seet (PhD '18, FEL '14). His work while he was a PhD student in my lab is foundational to the approach we are taking to help to create a vaccine. During his PhD training in UCLA's STAR program, Chris developed a method to produce a large number of dendritic cells from stem cells. Most important, he found how to make a specific type of dendritic cell that is particularly good at chopping up proteins and then presenting the pieces to the immune system to provoke a T-cell response. Much of what we've learned from our research in cancer immunotherapy also applies to immune responses against viruses. In this current work, we are taking blood stem cells from healthy donors and inserting certain genes from the COVID-19 virus SARS-CoV-2 into the stem cells. The stem cells are differentiated into dendritic cells, which then express the viral antigens and act as a factory to produce immune responses from T cells. Chris is using these specialized dendritic cells to try to find the key viral proteins that create an immune response and could be used as a vaccine.

Where does your inspiration come from?

From beautiful data. That's the thing that really excites me. It can be a very simple experiment — it doesn't necessarily have to be curing cancer — but if it's a beautifully done experiment that reveals something unexpected but credible, there's no feeling like it. I would think that if you are an artist and create something that is entirely new and original, it might feel similar. It is wonderful if

Illustrations: Kim Johnson

the result matches your hypothesis, but it is even more interesting if it reveals something that you hadn't thought about.

How are you looking at the problem of developing a COVID-19 vaccine differently from other researchers?

It's really through our use of this specific type of dendritic cell. We all have these dendritic cells in our lymph nodes; they are normally produced from stem cells and then travel to lymph nodes, where they wait for the next virus or other foreign proteins to stimulate an immune response. But because they are so rare in the blood, it hasn't been possible to get enough dendritic cells to work with in the lab. With our approach, we are modeling the normal developmental processes to produce large numbers of dendritic cells from stem cells, creating a great way to find the T cells that respond to the virus proteins.

What are the qualities of a great scientist?

A balance between enthusiasm/creativity and diligence. It's like the immune system: You've got to be able to detect the rare event and respond to it and build on it, but you also have to temper that response by careful attention to detail to make sure that you're not being misled. And, you have to love what you do. You can't do good science without really loving the process.

What is your chief characteristic that makes you particularly well-suited for the research in which you now are engaged?

I think it's my willingness to be flexible. I am looking for things that are not expected. I like detective stories and puzzles and working things out when there's something that doesn't quite match your expectations. And Chris is particularly well-suited for this moment because of his brilliance combined with his incredible work ethic.

What is the best moment in your day?

When a student brings in beautiful data with a smile on his or her face, and I can tell that they can't wait to show the results to me.

How do you want to change the world?

I'd love to have a real impact on treating cancer. It would be great if we moved vaccine development through our dendritic cell work. But, ultimately, I think the way to have the biggest impact in science is through the people you train who will carry that work forward or, perhaps, go in their own new directions to achieve great things.

What is your definition of happiness?

A sense of hope built on a solid foundation — a feeling that I am on sure footing, that things are in place and secure, and I have some control over the things that matter in my life, but also that I am moving forward toward something that's exciting and new.

What is your idea of misery?

When one cannot improve one's situation, with no control of one's direction and no hope for change.

What music do you listen to?

From Radiohead to Nina Simone to Brahms. It's all good.

Command a

BY DAN GORDON • ILLUSTRATIONS BY DAVIDE BONAZZI

How UCLA Health brought together its resources to confront the COVID-19 pandemic and manage an emergency situation in which even the best-case scenarios were daunting.

Well before COVID-19 transformed everyday life in America, William Dunne and his colleagues in UCLA Health's Offices of Emergency Preparedness, Infectious Diseases and Clinical Epidemiology & Infection Prevention began to closely monitor worrisome reports about a viral disease of unknown origins nearly 7,000 miles away. Since the Ebola scare of 2014, Emergency Preparedness has housed the Emerging Infectious Disease Preparedness team, which is charged with scouring medical intelligence at home and abroad for potential health threats to the community that warrant concern. And by late December, all eyes were focused on a cluster of cases coming out of Wuhan, China.

"We were getting reports of a potential outbreak," recalls Dunne, administrative director for UCLA Health Emergency Preparedness, Security and Safety Services. After a flurry of emails, phone calls and meetings in early January, Dunne's group and colleagues convened January 13 on a conference call with officials from Los Angeles International Airport, the Los the Angeles County Department of Public Health, the U.S. State Department and the Centers for Disease Control and Prevention (CDC) to discuss the novel coronavirus known as SARS-CoV-2. Two days later, an email went out from Daniel Uslan, MD, co-chief infection prevention officer for UCLA Health, alerting UCLA's senior leadership. "Based on our proximity to LAX and international travel to Los Angeles from China, we had to ramp up our preparedness and make sure we had our finger on the pulse of the medical intelligence around the globe," Dunne says.

and Control

For a mammoth enterprise such as UCLA Health, a swift and effective response to the rapidly evolving COVID-19 pandemic necessitated a nimble team operating under a fixed command-and-control structure with military-style precision — not something generally associated with a large academic institution.

As the novel coronavirus outbreak escalated over the next eight weeks into a global pandemic, it became increasingly clear that UCLA Health would need to mount a comprehensive and finely tuned response, with little time to spare. In Italy, a surge of COVID-19 cases overwhelmed hospitals, forcing difficult decisions about how to allocate scarce medical equipment and personnel. With rapid community spread on U.S. shores appearing imminent, a host of vexing issues had to be grappled with simultaneously, and fast: What steps needed to be taken to prepare for a potential surge of critically ill COVID-19 patients that could be just weeks away; how would the health system ensure the safety of thousands of health care workers, as well as patients requiring medical attention for other concerns, against a highly infectious pathogen at a time when the future supply of personal protective equipment (PPE) was uncertain; what was necessary to proceed on these and other fronts, when so much remained unknown about the new virus and when testing to identify infected individuals was scarce?

For a mammoth enterprise such as UCLA Health, a swift and effective response to the rapidly evolving COVID-19 pandemic necessitated a nimble team operating under a fixed command-and-control structure with military-style precision — not something generally associated with a large academic institution. But by March 4 — nine days before the White House declared the coronavirus pandemic a national emergency — that is exactly what occurred when Johnese Spisso, president of UCLA Health and CEO of UCLA Hospitals & Clinics, activated the incident-command center to oversee the health system's COVID-19 response.

UCLA HEALTH'S CENTRALIZED RESPONSE TO COVID-19 is modeled on the National Incident Management System's incident-command structure — referred to as the hospital incident-command structure (HICS) in its adaptation by health care organizations across the country. The idea is to bring key stakeholders together to efficiently and swiftly make and implement decisions addressing urgent needs. "It's a model that works

for a crisis response," says Robert Cherry, MD, chief medical and quality officer for UCLA Health and incident commander. "You have a centralized group of leaders within the command center overseeing different branches, with roles designed to be flexible enough to deal with the various external and internal challenges that come up."

While the day-to-day operations of the command center have wound down, the overall structure and what is known as "code triage" remains in place. Under the HICS system, members of the incident command team fill roles based on their skill sets, and those roles evolve based on need. "In a crisis, we ask people to put aside their normal roles and put on a new hat as we create a specific, hierarchical structure for managing command and control," Dunne explains.

That structure is designed to ensure that members "stay in their lanes," with clear lines of authority that discourage freelancing in decision-making, while promoting consistency in process and the best allocation of resources. In the case of the COVID-19 team, reporting to the incident commander were the chiefs of four sections: operations, planning, logistics and finance. The core command staff included medical/technical specialists who brought in subject-matter expertise; a public information officer, focused on internal and external communications; a safety officer, focused on incident health and safety of emergency-responder personnel; and a liaison officer who connected with external entities, such as federal, state and local public health leaders, as well as officials from regulatory agencies and other health care organizations.

All told, about 100 people participated in activities of the command center that typically began with a daily 7 am meeting with the senior executive group to ensure situational awareness inside and outside the organization and set the organizational goals for the day. That was followed by an 8 am direction-setting meeting for the broader command center team; a noontime meeting for communications and policy approvals; and a 3:30 pm debriefing at which section leaders reported accomplishments and provided updates — not to mention smaller-group meetings in between. Additionally, there was a 4:30 pm virtual briefing of all managers throughout the health system to provide them with information and updates to relay to their teams.

This was far from the first time UCLA Health established a command-center response to an emergency, nor a first for many members of the team. To prepare, everyone with a leadership role within the incident-command structure undergoes special training, and there are regularly planned exercises, as well as actual emergencies — devastating wildfires or mass-casualty events like the 2008 train crash in Chatsworth, for example — during which the command center is activated. In addition, there are planned internal events such as UCLA's move into new hospital facilities in 2008 (Ronald Reagan UCLA Medical Center) and 2011 (UCLA Medical Center, Santa Monica [which now is called UCLA Health-Santa Monica Medical Center]) and unplanned ones such as utility outages.

There also has been plenty of preparation for a potential pandemic, in collaboration with the CDC, California's state and local health departments and, because of the volume of international travelers who arrive in Los Angeles, LAX. "Ever since the Ebola scare, we have worked to train, review policies and procedures and conduct drills so that, in the unlikely event we ever had a patient with Ebola walk into our emergency department, we are prepared," Dr. Uslan says. "So, with COVID-19, it was a natural transition for the infrastructure of our existing Emerging Infectious Disease Preparedness Program to support the COVID-19-preparedness efforts."

But by the first meeting of the COVID-19 command center, on March 4, it was obvious this would be different. "Our program was well-structured to care for a patient with Ebola, but to scale up that response for the number of patients we were anticipating in this pandemic required a complete rethinking," Dr. Uslan says.

There was another key difference: Previous command center responses had been for short-term events, typically lasting a day or two; COVID-19 required gearing up for the long haul. "A mass-casualty event usually begins with the highest magnitude of affected individuals at the beginning, when you are trying to deal with all the victims at once, and it gets progressively less complicated after that. The COVID pandemic," says John C. Mazziotta, MD (RES '81, FEL '83), PhD, vice chancellor for UCLA Health Sciences and CEO of UCLA Health, "has been a mass-casualty event in reverse, and in slow motion. It also doesn't have a clear end point."

"Our program was well-structured to care for a patient with Ebola, but to scale up that response for the number of patients we were anticipating in this pandemic required a complete rethinking."

"We had to stand up policies and guidelines almost immediately as we were entering unknown territory. We didn't always have the answers. That is not something that we are used to."

The pandemic clearly was not something that would burn itself out over the course of several days or even several weeks. "We needed to make sure we had bench strength — more than one individual for each role, along with a wider range of positions filled and more authority delegated, knowing this is a slow-rolling, long-term response," Dunne says.

Indeed, the COVID-19 command center leaders commonly define their effort as "a marathon, not a sprint." Referring to the sustained, constantly evolving nature of the COVID-19 response, one member of that team goes further. "It's an ultra-marathon," says Annabelle de St. Maurice, MD, co-chief infection prevention officer for UCLA Health.

What's more, Dr. Cherry adds, "For something like an earthquake, you pretty quickly understand what you're dealing with. Months into the pandemic, there's still a degree of uncertainty."

WHEN THE COMMAND CENTER TEAM HELD ITS FIRST MEETING, it had been just a little more than two months since the discovery of SARS-CoV-2, which was labeled a "novel" coronavirus for good reason. "COVID-19 is an unusual viral disease that can affect multiple organs — and it was brand new," Dr. Cherry says. "There was still so much we didn't know about disease transmission, severity and how to treat it. We've learned a tremendous amount since then, but even as we learn more, we have more questions."

While plenty of effort had gone into developing a playbook for responding to a pandemic, no plan could anticipate what would be needed for a new infectious disease, much less one that would become a once-in-a-century pandemic. Over the course of its first 73 days, the incident command team would develop 206 policies and procedures on every facet of health care in the era of COVID-19 — symptom tracking, treatment protocols, testing, visitation rules, use of PPE and return-to-work guidelines, to name a few. The team did so based on the information it had, which often was limited, though expanding with time. Dunne likens the process to trying to assemble a plane while it is in flight.

"We had to stand up policies and guidelines almost immediately as we were entering unknown territory," says Karen Grimley, PhD, chief nursing executive for UCLA Health, who, with Richard Azar, UCLA Health's chief operating officer, began preparing the response as soon as the incident-command center was activated. "We didn't always have the answers. That is not something that we are used to."

The resources of UCLA's infectious diseases specialists also had to kick into high gear. "It wasn't like our division had a written plan that said, 'When we have a pandemic, this is how we will re-organize our inpatient service, call schedules and treatment plans,'" says Judith Currier, MD, chief of the UCLA Division of Infectious Diseases."

The greatest urgency in those early days was ensuring enough hospital capacity to safely accommodate an anticipated surge of COVID-19 patients, against the backdrop of warnings that millions of Californians could quickly become infected and overwhelm the health care system. "We didn't know what to expect, but we could see what was occurring in New York City and in other parts of the world, and we needed to prepare for that possibility here," Azar says. "We were looking at models for best-case and worst-case scenarios, and even the best-case scenarios were daunting."

Command center leaders worked with colleagues across the health system to develop a surge plan that detailed ways in which UCLA's Westwood and Santa Monica hospitals would create additional bed capacity at ascending levels of activation, ranging from Level 0 (normal operations) to Level 3. "Our goal was to maximize all of our physical spaces within the contiguous licensed facilities at our Ronald Reagan UCLA campus and our Santa Monica UCLA campus," Spisso says. "If fully implemented, our multilevel surge plan would have brought our total capacity to more than 1,100 beds for inpatient care."

Under a worst-case scenario, non-COVID-19 patients would be redirected to the Navy hospital ship USNS Mercy, docked in the Port of Los Angeles, and/or to UCLA's affiliate hospitals. Fortunately, this most-dire scenario never materialized, but in anticipation of an influx, the Level 1 plan was activated, which meant engaging with the surgical chiefs of UCLA Health to determine which procedures could safely be postponed for 30-to-45 days in order to free up bed capacity. UCLA's two main hospitals typically operate at more than 100 percent capacity each day; freeing up beds through these postponements brought them down to the 50-to-60 percent capacity, Azar says.

THE SCARCITY OF COVID-19 TESTING WAS ANOTHER MAJOR EARLY CHALLENGE. "It was clear from the start that we needed to prioritize who would get the tests and to be able to test people in ways that wouldn't increase the risk of transmission," says Dr. de St. Maurice. "During the period when testing capacity was limited, we had to prioritize the frontline health care workers and patients who were extremely sick and likely to be positive."

After relying initially on the limited resources of Los Angeles County, the command center team worked closely with the UCLA Clinical Microbiology Laboratory, under the direction of Associate Professor of Pathology & Laboratory Medicine Omai Garner, PhD (FEL '12), to quickly build up UCLA's independent capacity to meet the demand. In relatively short order, UCLA was able to develop the laboratory resources to conduct its own tests — allowing for a dramatic expansion that "became a game changer," Dr. Cherry says. Within several weeks of standing up the command center, UCLA was able to test every patient entering the hospital, regardless of whether or not they were showing symptoms. This allowed COVID-19 patients to be segregated into certain units, away from those who were disease-free, reducing the risk of transmission to patients and clinicians.

The ramp-up also allowed UCLA to become more strategic in handling the suspected COVID-19 cases among those who didn't require hospitalization. To divert people away from the hospitals if they didn't need to be there and reduce the flow of potentially infected individuals bringing the virus to uninfected hospital areas, UCLA Health established drive-through and walk-up testing sites in the community, run by trained personnel equipped with appropriate PPE. Working through the command center and in coordination with the clinical microbiology lab, multidisciplinary teams helped to troubleshoot through ways to ensure safety and efficiency in the operations of these sites.

Given the highly transmissible nature of COVID-19, isolating infected patients always was a priority. At the start, mobile tents went up outside of Ronald Reagan UCLA Medical Center and UCLA Health-Santa Monica Medical Center to prevent the emergency departments from becoming contaminated as incoming patients awaited their diagnosis. Ultimately, all UCLA Health hospitals and clinics instituted safety measures that included universal masking, testing new patients and screening all hospital entrants for temperature and any COVID-19-like symptoms. Furniture was rearranged in clinic waiting rooms and cafeterias to promote physical distancing, and visitation for non-COVID-19 patients was curtailed to prevent large gatherings.

"We had to make sure patients with chronic illnesses got the care they needed and wouldn't avoid coming in because they were worried about going to a hospital or clinic," says Michael A. Pfeffer, MD (RES '07), assistant vice chancellor and chief information officer for UCLA Health. "We spent a great amount of time determining how we could provide a safe space, as well as communicating to our patients that it was safe."

Command center discussions also focused heavily on ensuring a safe working environment for UCLA Health employees, which involved everything from securing sufficient PPE to training thousands of physicians, nurses and other health care professionals in the policies and protocols for the equipment's proper use.

"What is strikingly different about this crisis, as opposed to others, is that a paramount issue has been the safety of health care workers," Dr. Cherry says. "They are a critical infrastructure, and making sure they are in the fight and able to take care of patients the next day requires that they are disease-free and able to confidently go about keeping patients protected and saving lives."

"It was clear from the start that we needed to prioritize who would get the tests and to be able to test people in ways that wouldn't increase the risk of transmission. During the period when testing capacity was limited, we had to prioritize the frontline health care workers and patients who were extremely sick and likely to be positive."

"In a crisis, you can't lose sight of the fact that patient care is at the center of our work. We needed boots on the ground to learn firsthand about our team's issues and concerns so that their voices were represented in our decisions."

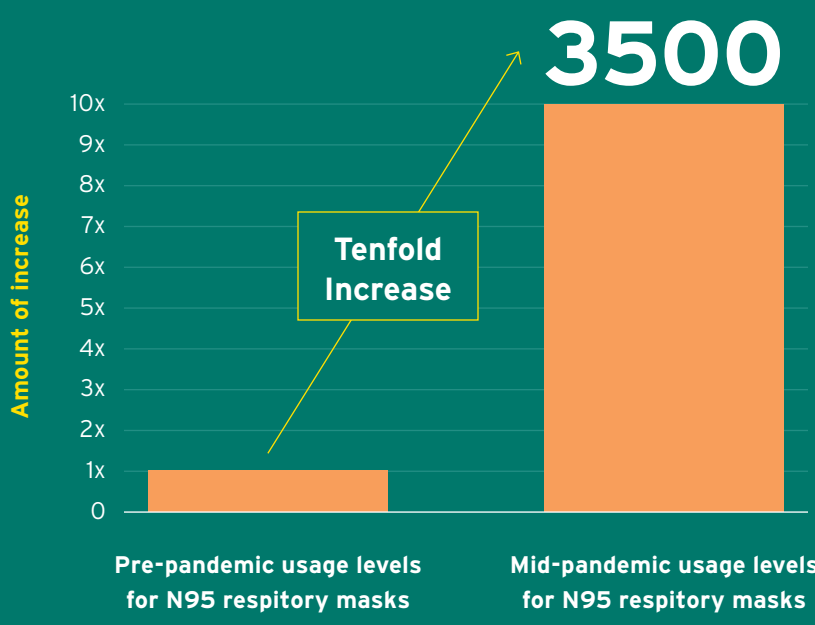
When she wasn't taking part in the command center meetings, Dr. Grimley was spending considerable time on the wards, discussing safety issues with nurses and other health care staff. "In a crisis, you can't lose sight of the fact that patient care is at the center of our work. We needed boots on the ground to learn firsthand about our team's issues and concerns so that their voices were represented in our decisions," she says. "We had to recognize that people were scared, particularly at the beginning, when little was known about the virus, and they were hearing about what was happening to colleagues across the country."

UCLA HEALTH HAD A STOCKPILE OF PPE stored in a warehouse outside the university, but early on, the rate of depletion, or burn rate, was significantly higher than expected — roughly 3,500 N95 respiratory masks a day, for example, more than tenfold pre-pandemic levels. Meanwhile, the supply chain that all hospitals had relied on to replenish their PPE was significantly disrupted because of the global impact of the pandemic. "If you have 50,000 masks on hand, that sounds like a lot, but if you're using 3,500 a day and don't have any more coming in for three weeks, it is a major concern," Dr. Uslan says.

To keep close tabs on the amount of supplies on hand, the command center team's IT experts developed dashboards for real-time tracking. The leadership also pursued innovative solutions to cope with the shortage. A sterilization process developed at the University of Nebraska, ultraviolet germicidal irradiation, was already being used at UCLA to sterilize equipment such as wheelchairs. Working with the vendor to repurpose the procedure enabled the sterilization by the end of June of more than 50,000 N95 masks that would have otherwise been discarded, allowing 600 a day to be safely reused.

With much of the entertainment industry shut down, the command center joined forces with the International Alliance of Theatrical Stage Employees union, which summoned volunteers to sew additional masks out of surgical wrap. The command center team also turned inward, drawing on expertise within the UCLA campus community to develop PPE in-house. A collaboration with the schools of

The burn rate for **N95** respiratory masks was roughly **3,500** a day, more than **tenfold** pre-pandemic levels.



By the end of **June**, UCLA was able to **sterilize** more than **50,000** **N95** masks that would have otherwise been discarded, allowing **600** a day to be safely **reused**.

engineering and dentistry brought 3D-printed face shields to UCLA health care workers. And, as the command center team was finding new ways to build its PPE stockpile, friends of UCLA Health stepped up to donate additional supplies. "It was really gratifying to see how our broader community came together to support us," Spisso says. "That brought some light into what to many felt like a very dark time."

The number of individuals and organizations from the community wanting to support UCLA with PPE and other items was both heartening and, for a time, overwhelming. "It was amazing — we were feeding hospital staff every day with donated meals," Dr. Grimley says. "Early on, we were getting so many calls and emails from people because they wanted to recognize these frontline and behind-the-scenes heroes." So many people wanted to help, that responding to all of these offers and vetting the donations became a huge task for the command center's logistics group. A warehouse in Van Nuys was staffed and used as the receiving center for many of the donated products, and a process was established to determine their feasibility and where they could be put to use.

In an unfolding and ever-evolving crisis, the daily noontime communications meetings among a multidisciplinary group of clinicians, administrators and marketing and media relations experts became essential to meeting the needs of both internal and external audiences for clear, concise and consistent updates and guidance. Externally, the meetings sought to determine what and how to communicate in a unified way to local, state, and federal entities, as well as to the general public, both directly and in response to media requests. Internally, with 30,000 faculty, staff, students and volunteers, and UCLA Health clinics stretching from San Luis Obispo to southern Orange County, the challenge was to ensure information that was pertinent and on target for a wide-ranging audience.

The command center used the meetings as a launching pad for developing and approving daily COVID-19 updates, both clinical and non-clinical, to the entire organization. These included links to new clinical guidance, operating procedures and educational tools, along with other information employees needed to do their jobs. The command center's logistics team oversaw the development of a testing dashboard (posted and regularly updated on the UCLA Health COVID-19 website, uclahealth.org/coronavirus, it breaks down testing results and daily hospitalized patients, both globally and by county), as well as other dashboards used to inform the team's daily operations.

One of the major transformations overseen by the command center team was the leveraging of technology to allow patients to be seen over video by doctors and nurses from the safety of their home, either for routine visits not requiring physical contact or to triage patients with COVID-19 symptoms and determine if they needed to be seen in person. "We were able to scale telehealth visits from an average of about 400 a month prior to the pandemic to more than 80,000 a month, which allowed our providers to continue caring for our patients," Dr. Pfeffer says.

Making that kind of transition was a great feat involving everyone from the information-technology and operations personnel to the providers who learned an entirely new health care-delivery method, as well as patients who embraced the change, Dr. Pfeffer notes. Technology also has been used in certain situations for video visits with hospitalized patients as a way of minimizing physical contact between COVID-19 patients and health care workers and to allow family members to see patients when visiting isn't safe.

The telehealth uptick represents one of many examples of a quick and well-tuned response to a complex need, involving a wide cross-section of a massive organization. While none of the command center team members is about to take a victory lap given the death and despair that was inevitably going to be associated with COVID-19, they know it could have been far worse.

"It's been gratifying to see everyone operating with a laser-like focus to manage the response," Dr. Grimley says. "We have drawn from every facet of the organization to get the answers we need, making decisions based on the best evidence. People bring in their own expertise, and that knowledge is respected. That's what makes UCLA strong, and it has allowed us to keep a level of calm that was essential to being able to ensure the best possible care and safety for our patients and staff."

Dan Gordon *is a frequent contributor to* U *Magazine.*

"It's been gratifying to see everyone operating with a laser-like focus to manage the response. We have drawn from every facet of the organization to get the answers we need, making decisions based on the best evidence."

COVID-19 Diaries

By Claire Panosian Dunavan, MD • Photography by Jessica Pons

Six UCLA infectious diseases physicians share their stories of an unfolding crisis from the frontlines of the novel coronavirus pandemic.

In January 2020, I received an email from a friend at *The New York Times*.

Hi, Claire:

Can I ask: Are you as nervous about this coronavirus as I am? I'm not normally an alarmist, and I wasn't one as late as yesterday morning. But last night, as I was doing the math in my head on the subway, I became one.

Two weeks ago: 50 cases in China and 1 death

One week ago: 500 cases, mostly China, 20 dead

Yesterday: 10,000 cases, 200+ dead

That doesn't sound like SARS or MERS. Case spread that rapid with mortality at or below 1 percent sounds like 1918.

At the time, I was unsure if I would ever write about the virus in Hubei Province. In January, the threat was unclear, and it had not yet touched our shores. But this note from award-winning reporter Donald G. McNeil, Jr. — who specializes in writing about infections and plagues — got my attention.

Milestones followed. On February 11, the International Committee on Taxonomy of Viruses christened the foe SARS-CoV-2 — severe acute respiratory syndrome coronavirus 2 — and the illness it causes COVID-19, and, two weeks later, a memo from Daniel Uslan, MD, clinical chief of infectious diseases and co-chief of infection control for UCLA Health, marked another defining moment.

Dear ID colleagues,

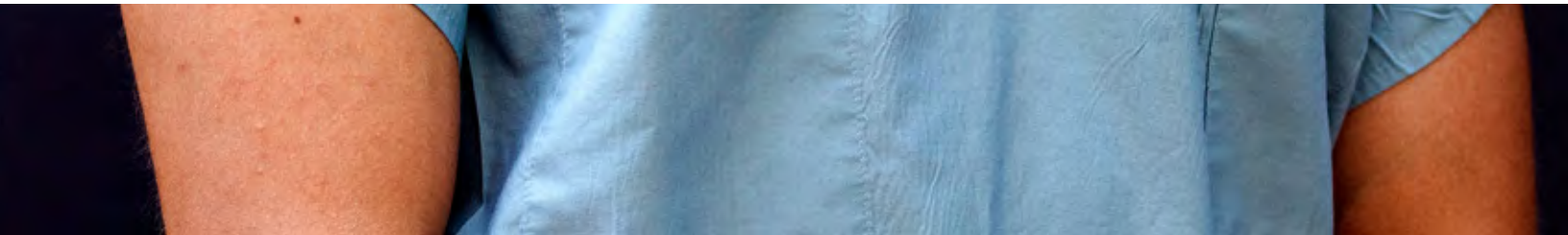
As you are all aware, the situation with COVID-19 has been changing dynamically, and over the weekend cases were reported in South Korea, Italy, Iran and others.

In short, although UCLA's hospitals would not admit their first patient for another 14 days, the "game-on" moment had arrived.

Now I knew my mission: to capture once-in-a-lifetime perspectives from newly trained physicians. What follows are selected thoughts and experiences from six younger colleagues in UCLA's Division of Infectious Diseases — Paul Adamson, MD, (FEL '21); Mary "Catie" Cambou, MD '15 (FEL '21); Amy Vijay Dora, MD (RES '17, FEL '20), Pryce Gaynor, MD (FEL '19); David Goodman-Meza, MD (FEL '18); and Ashrit Multani, MD — collected from conversations recorded over their first three months spent tackling the virus. I applaud their commitment and thank them for sharing from their hearts.

Dr. Paul Adamson

Dr. Adamson's academic interests span basic science to primary care and public health research on HIV and reproductive health. After earning his MD at UC San Francisco and completing his residency at Yale, he now is a third-year infectious diseases fellow working toward his PhD. He currently is investigating the varied clinical course of COVID-infected inpatients at UCLA.



APRIL: GEARING UP

Dr. Amy Vijay Dora

"It's like something from a movie, this global pandemic with sheltering in place and social distancing. In the last week or so, we've gone from monitoring symptoms at home to universal masking to temperature checks before entering the hospital. Now we're screening every admission, and there are no more elective cases. I also feel like the other shoe is going to drop, the "second surge" of patients who are thinking: 'Oh, I won't come to the hospital just yet, I'm worried about getting COVID. Let me see if I can wait it out and take care of this at home.' The last time I felt truly terrified was as an intern or early resident. Now, things just don't register in quite the same way. In medicine, you learn to compartmentalize. You control your emotions, so you can do your job."

Dr. Pryce Gaynor

"Right now, every COVID patient gets discussed as a division because we're all in uncharted territory. So we have come together to manage patients, which is good. At the same time, the hospital census is down. That feels bizarre. I like that L.A. County is selecting random individuals to test for COVID. We know that people who appear healthy can transmit it. Last week, when I was covering the EID [emerging infectious diseases] pager, I was called about a patient who got tested before his angiogram. He was positive and totally asymptomatic. In the future, I believe cases may ease, but that COVID will definitely come back. I'm also worried about dealing with flu and COVID at the same time. What will that do to our health care system?"

"In January, I remember reading about cases of pneumonia in China and thinking, 'I wonder if this could spread?' A month later, when the answer became clear, I realized that our public health system is so underfunded, we couldn't control the epidemic."

– Dr. Paul Adamson

Dr. Paul Adamson

"In January, I remember reading about cases of pneumonia in China and thinking, 'I wonder if this could spread?' A month later, when the answer became clear, I realized that our public health system is so underfunded, we couldn't control the epidemic. I mean, even though California is better than some states, when we had only 100 or 200 or 300 cases, ideally we would have done contact tracing — figured out who the patients lived and worked with —tested their contacts. And if you found infections, you'd isolate and test the next set of contacts. But then I was thinking: There's like only 15 or 20 people in County Public Health working on a COVID response. Our system is broken in many ways. Already, this crisis has revealed that."

Dr. David Goodman-Meza

"On my first COVID weekend, I had 13 patients to see — about nine of them in intensive care units — and everybody did well. They all went in the right direction. Most of the ICU patients got extubated. I should have taken a picture. They had this beautiful poster counting the patients who'd been in the ICU, how many they'd extubated, how many they'd discharged. So yeah, it was actually uplifting. As for emotions, I don't know how many doctors are talking about panic attacks, but I've awakened at 2 am and maybe had an extra cover and felt hot and it's: 'Oh my God. Do I have a fever? Oh my God, I got it.' Plus, my wife is pregnant, and sometimes she's a little bit sick in the middle of the night. So she'll wake me up, and we'll have panic-attack conversations together. I mean, for a lot of docs, it's not a question of if. It's a question of when will I get it, right?"

Dr. Mary "Catie" Cambou

"Many of us went into infectious diseases because of a possible pandemic," says Dr. Cambou, whose family includes doctors, dentists and a documentary filmmaker. Now a third-year fellow in the Division of Infectious Diseases' academic track, Dr. Cambou is conducting research to examine maternal-to-child transmission of HIV, syphilis and SARS-CoV-2.

Dr. David Goodman-Meza

Born and raised in Mexico, Dr. Goodman-Meza attended medical school in Tijuana and completed his residency at NYC Health + Hospitals/Jacobi Medical Center in the Bronx, New York, and his fellowship at UCLA. He now is a clinical instructor studying HIV and substance abuse and exploring how artificial intelligence might be used to diagnose and manage COVID-19.

Dr. Mary "Catie" Cambou

"We have friends in New York who have tested positive — several of my husband's co-residents in emergency medicine and a former attending as well as one of my co-residents and his family. It's challenging when you know you have to go back a week or two later. What they're describing is unreal. I mean, their institutions have been supportive, but COVID hit so quickly. They didn't have time to prepare the same way we have here. I had a COVID shift last weekend. The nurses, the assistants… it does seem like people recognize how important they are. But other essential workers also make the hospital function. I'm sure they're scared and nervous to go into those rooms, but they do it. I admire their courage. There's no way they could have anticipated something like this when they signed up to work in the hospital. COVID has also made me recognize my own privilege. Since my husband is also a physician, we're not surviving paycheck to paycheck. On the other hand, I doubt we'll return to the way things were. Right now, nobody wants to get on a plane or walk into a busy restaurant. So the economy has changed until we deal with COVID."

Dr. Ashrit Multani

"I don't think I've ever said 'I don't know' to my transplant patients as much as I have during the last few weeks. Patients are always looking to us for answers. We're the doctors, we have all the science and technology and research, and we're supposed to know. But because the current evidence is in people without transplants, I can't predict how my patients will fare. At least testing has ramped up. Early on, [the UCLA lab] could only do 30-to-40 tests per day, which were mainly run on super-sick people. Now that we can do 800-plus per day, we can find out who has it and who doesn't. That's a huge step forward. I've also seen everybody in our division sacrificing and helping each other out. That's a positive aspect of COVID, at least for me, just seeing how unified and supportive everybody is."

APRIL/MAY: MORTAL MATTERS AND THE "INFODEMIC"

Dr. Cambou

"If we've learned anything, it's that we have to look at larger patterns and trends. For a while, it seemed like the numbers were starting to go down, but yesterday the U.S. reported the highest number of cases in a single day. Our friends in New York are seeing trauma patients who also have ground-glass changes in their lungs. I can't help but wonder: Did they have that car accident because they're not oxygenating due to COVID? There's still so much we don't know. The best analogy I've heard is that we're building the plane as we're flying it. When this all started, I had trouble sleeping and lost my appetite. Then I became more sensitized. But my heart still goes out to others. A cafeteria worker said, 'We're so proud of you, keep doing God's work.' And I said, 'Well, I feel the same about you. We all have a role to play, we have to do this together.' Those are moments when the best of humanity shines through."

Dr. Gaynor

"There was someone in the ICU on 15 liters of oxygen just sitting there and texting on his phone. Another woman who had just been transferred [had a blood-oxygen saturation level] in the 70s and was taking stuff out of her purse, putting it back in — you could tell she needed more oxygen. And it's not just the silent hypoxia we're seeing, but other conditions — the strokes, the pulmonary emboli. It's terrifying what this virus can do to the body. In addition, families [who can't be in the hospital to be with patients] are at the mercy of doctors and nurses calling them when they can. Otherwise, they don't know what's going on. It made me think about my 96-year-old grandmother who was recently hospitalized. Because that was on my mind, I spent a lot of time this week speaking with patients' families."

"Everyone is desperate for the latest information. Then you start to get overwhelmed with, 'Well, how do I even decipher all of this? There's so much literature. If I don't read even half of these articles, am I going to miss something crucial?'"

– Dr. Amy Vijay Dora

Dr. Adamson

"We basically have three types of patients in the hospital. There are people who come into the emergency room and get intubated within 12 hours, people who come in and tank four or five days later and people who get admitted for a day or two and go home. But, overall, our survival rates have been good, especially compared to places like New York. Maybe that shows what happens when you don't reach capacity, or maybe it's because UCLA provides excellent care. ICU care is one thing we're really known for. Eventually, I believe, we'll have a vaccine, but I'm also concerned. Today, there's so much mistrust and misinformation that vaccine uptake could be challenging. Plus, there's the tension between wanting a vaccine and pushing it through so fast that we skip the usual safety checks."

Dr. Dora

"The last time we spoke on the phone, I said something like: 'We know what we know, we know what we don't know.' Now I need to revise that and say, 'Caveat: We don't know what we don't know.' Everyone is in overload. Everyone is desperate for the latest information. Then you start to get overwhelmed with, 'Well, how do I even decipher all of this? There's so much literature. If I don't read even half of these articles, am I going to miss something crucial?' This year, my trip to Peru was canceled because the hospital in Iquitos is overwhelmed. One of my Peruvian friends hasn't seen his family in weeks. We're going to Zoom to help him keep up because, if you're dealing with that kind of patient load, how can you even process?"

Dr. Multani

"The hard part is keeping up. I spend most of my free time reading, but questions remain. For example, what works and what doesn't? You still can't predict who's going to crash and when. A transplant patient who never required oxygen joined our remdesivir-placebo trial. I don't know what he got, but he left the hospital five days later. Then there's: How long are they shedding virus? How long do we continue isolation? Should we repeat tests? Having these conversations with patients has been challenging because sometimes I'm saying the opposite of what I said the previous week. But I've been very honest. It's, like, 'Hey, we're learning as we go, and now our guidance has changed.' Even at home, I can't escape. At least I saw the bioluminescence. Beaches are officially closed, but I needed to be outdoors, and everyone was socially distanced and masked. Just seeing the neon blue going through the wave, hearing the crash of the ocean, feeling the serenity — it was gorgeous."

Dr. Pryce Gaynor

From the time she was in elementary school, Dr. Gaynor was captivated by microbiology and infectious diseases. After completing her residency in internal medicine at the University of Arizona and her fellowship in infectious diseases at UCLA in 2019, she now is a first-year attending specializing in the care of patients with transplant-related infections.

Dr. Ashrit Multani

Dr. Multani earned his MD in Bangalore, India, where he participated in polio-eradication campaigns, and completed his residency at Johns Hopkins University School of Medicine and fellowships at Stanford University School of Medicine. He came to UCLA in 2019 as a first-year attending with expertise in fungal and other transplant-related infections.

JUNE: STARTING OVER?

Dr. Gaynor

"This last time on the COVID service, I was surprised how slow it was. But it was still draining because every day I saw four or five patients in the ICU who'd been vented so long. We don't know when they're going to improve, yet some still walk out. One ICU attending said, 'This is just the new normal we need to adapt to.' Then I hear certain people say it's not as big as the media or government claim. And I'm thinking, 'You're sitting all day in your house on Zoom. How dare you make that statement?' Yesterday, at a campus rally, someone called systemic racism a public health emergency. I agree with that. Going forward, I hope we change policing, but I also hope we change health care. Until people of color have the same care as everyone else, this won't go away."

Dr. Adamson

"It feels like we're always putting out fires. In some way COVID has pushed science faster than ever before. Who knew we would have multiple anti-viral trials across the world and get results so quickly? It's astounding. Then I think about the next problem. Because we don't have enough, how do we ration the drug? Who do we give it to? Science is marching on, but without its normal checks and balances. Plus, we need to publish data quickly. What used to take a decade is happening over four months. My wife — an occupational therapist for special-needs children — sees it through a different lens. A lot of her families were already living on the brink. When the pandemic began, there was a run on baby formula. They couldn't find it anywhere except for local stores that were price-gouging. My response was outrage. I told my wife her patients should report this to a hotline. My wife was like, 'Oh, let's just buy it.' So she ended up buying formula and delivered it to three families in South Central."

Dr. Dora

"This weekend I was covering the VA Hospital, and because experimental treatments are more available, I was coming up to speed on enrolling patients in the remdesivir lottery. About half of the patients were on ventilators and couldn't talk, but one person said: 'I get that you're offering these treatments, but I don't want to be experimented on.' We need to be honest about our lack of evidence. In the end, it's up to patients to decide whether to take drugs that may or may not help them. At the start, my greatest fear was: 'How will this impact me and my family?' I still fear for my parents. But my biggest fear going forward is: 'How do we change who's affected in the future?' Finally, the conversation is switching from 'what are the genetic risk factors?' to 'what are the social determinants of health?' Plus, history teaches that pandemics come in waves. The lessons we're learning today are important for the future."

Dr. Multani

"Because of the protests, yesterday and today I left work early after tucking everyone in. In Santa Monica, I had a bird's-eye view. We saw the looting at REI. The building on fire was right across the street. There was noise and smoke into the late evening. There's so many mixed emotions. On one hand, you're feeling everyone's pain, but at the same time, it's, like, isn't this distracting from the conversation we need to have? And of course we can't ignore what this might do to COVID. Being a first-year attending is difficult enough. Being a first-year transplant ID attending at a new institution during a pandemic is quite a challenge. This pandemic has highlighted the importance of ID physicians, which is good, but eventually, I expect things to go back to the way they were. On the other hand, I hope some things like telemedicine and working from home are here to stay."

"I struggle because right now is dark. But we still have to hope we can build a more just and equitable society. Otherwise, as my husband said this week, 'Why are we even doing this?' That has to be our guiding principle."

– Dr. Mary "Catie" Cambou

Dr. Goodman-Meza

"I dreamed that the summer heat would affect the virus, but in reality, our public health efforts didn't quell it like SARS1, and now it's really latched on. We may have flattened the curve and 5-to-10 percent of people in L.A. have already been infected, but that just means there's another 9 million to go. In my personal life, the hardest thing is my wife's pregnancy. Zooms are great, but there's nothing like holding a baby. My mother is willing to come [when the baby is born], but is that a risk we're willing to take? Three months ago, the question was unthinkable. Now, we're going to have to decide."

Dr. Cambou

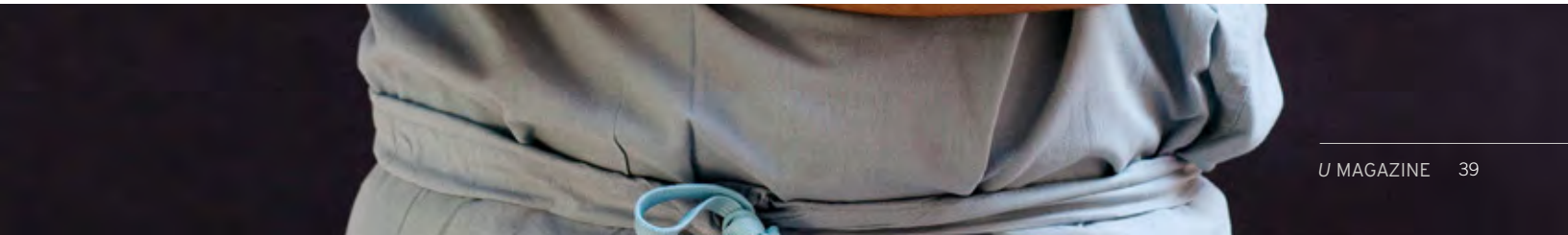
"The protests have been emotional, but they've also been a long time coming. After 400 years of oppression, we can't go back. There are just too many people living on the edge. We have to do better. I think this applies to COVID as well. This idea that individuals can solve the crisis seems like a false American ideal. We need the support of hundreds of thousands of people. So, yes, I struggle because right now is dark. But we still have to hope we can build a more just and equitable society. Otherwise, as my husband said this week, 'Why are we even doing this?' That has to be our guiding principle."

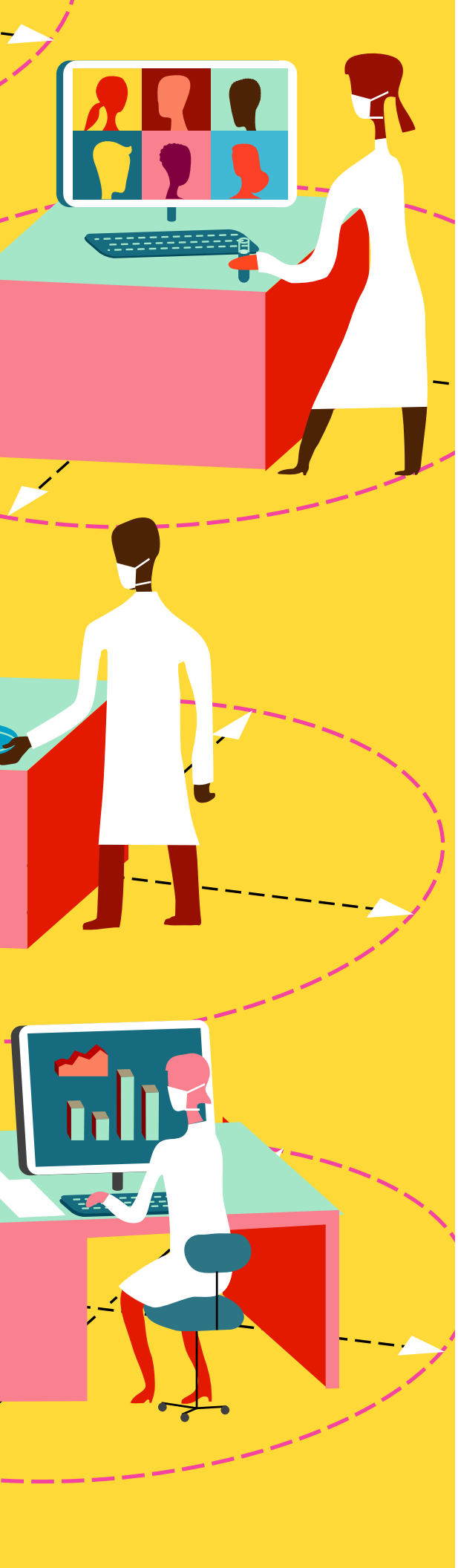
Dr. Claire Panosian Dunavan *is a UCLA infectious diseases specialist and a medical writer. Her writing has been published in the* Los Angeles Times, The New York Times, The Washington Post, Discover *magazine and* Scientific American, *among others.*

Editor's note: Dr. Amy Vijay Dora requested that this article be dedicated to the memory of Dr. Luis "Lucho" Alberto Panduro Rengifo of Iquitos, Peru, an infectious diseases specialist who was a friend and mentor to many visiting UCLA trainees. Although he initially improved from his own COVID-19 illness, Dr. Panduro Rengifo returned to his crowded hospital to care for other infected patients and then quickly relapsed and died in mid-May. Our hearts go out to his family and his many colleagues, friends and patients who continue to mourn his loss, as well as to those who mourn the deaths of the more than 1,200 caregivers in the United States and the many more around the world who have lost their lives in the fight against this pandemic.

Dr. Amy Vijay Dora

When the COVID-19 pandemic hit, Dr. Dora was chief fellow for UCLA's five-campus infectious diseases training program. During her residency and fellowship, she also completed three rotations in Peru. Dr. Dora now is a first-year attending in infectious diseases at UCLA Health-Santa Monica Medical Center with deep interests in international relations, global health and social justice.





How the Pandemic Reshaped Research

By Marrecca Fiore

Illustration By Otto Steininger

When COVID-19 hit, it was necessary to dramatically scale down laboratory research to maintain social distancing. Now, with some restrictions still in place, UCLA's scientists are returning to the labs to continue their quests for medical breakthroughs.

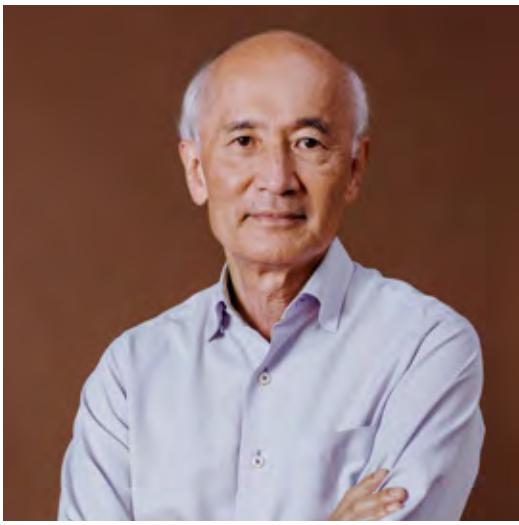
The word came down to the researchers at UCLA about two months after the first case of COVID-19 was diagnosed in California: Shut it all down.

"It was March 17 — I remember it well," says Stephen T. Smale, PhD, vice dean for research in the David Geffen School of Medicine at UCLA. "It was decided very quickly."

The plan had been to incrementally scale back the number of researchers working in the labs to increase physical distancing and limit contact, "but it became apparent that research would have to be ramped down dramatically, instead," he says.







While the ramp-down of research during the COVID-19 pandemic was difficult, there have been some unanticipated benefits, say (clockwise from top left) Drs. Yalda Afshar, Yibin Wang, Roger Wakimoto, S. Thomas Carmichael and Stephen S. Smale.

Photos: Jessica Pons

"We worked closely with the wet labs and the laboratory faculty to understand what was essential — and how we would actually define that term — and how to keep things going in a way that reduced personal risk and viral exposure."

There were a few exceptions — research involving animals or delicate cell lines that had to be maintained, clinical trials in which patients were receiving potentially lifesaving treatments, COVID-19-related research. Beyond that, everything else came to a stop.

"It was total and complete," S. Thomas Carmichael, MD (FEL '01), PhD, chair of the Department of Neurology, says. "We worked closely with the wet labs and the laboratory faculty to understand what was essential — and how we would actually define that term — and how to keep things going in a way that reduced personal risk and viral exposure."

By June, as the entire UCLA Health system started moving toward resuming more normal operations, research scientists were allowed to get back in their labs — with certain restrictions. The number of people working in a lab was limited to 25 percent of normal occupancy, or about one person per 250 square feet of laboratory space or one person per laboratory bay (where there normally might be four-to-six people). By August, some labs were able to operate at 50-to-75 percent of their normal capacity. "We are at 50-to-60 percent of normal — still regrettable, but not bad," Dr. Carmichael says. "One of the lessons we learned was that we can do a lot of our interactions in group discussions and in inter-institutional collaboration through Zoom."

FOR MANY JUNIOR FACULTY, THE RESEARCH SHUT-DOWN WAS PARTICULARLY WORRISOME. "It was the right thing to do at that moment, and it was all hands on deck," says Yalda Afshar, MD (FEL '19), PhD, assistant professor-in-residence of obstetrics and gynecology and a physician-scientist whose research is focused on congenital heart disease and placental development. But, "a lot of the cells that we work with are really precious tissues from rare diseases, and you worry about a lost opportunity,"

she says. "We took care and made sure that we kept our most precious tissues so that we could work with them when it became safe to do so again."

Dr. Afshar also was concerned that her grant was running out. "Am I going to have enough data to submit my progress report? How am I going to get a new research-funding grant? That anxiety is there. But as I watched my colleagues, more senior faculty, my mentors going through the same thing, it became clear that we're all in this together," she says. "And it actually brought the scientific community really close and resulted in really creative ways of doing science."

It also led to a shift among some faculty in their research focus, toward COVID-19. For Yibin Wang, PhD, professor of molecular medicine, that meant turning his attention from cardio-metabolic diseases and the impact of obesity and diabetes on cardiovascular health to their impact on patients infected with the SARS-CoV-2 virus. "The work we have been doing is very relevant to addressing issues around this disease," Dr. Wang says. "If you look at what's happening with COVID-19, we've learned that only four-to-five percent of patients who are infected will have a very severe outcome. But if you look at people with severe obesity and cardiovascular-compromised individuals, the percentage of people with severe outcomes can reach as high as 60 percent."

Dr. Afshar, too, has found relevance for the research she regularly does in addressing impacts of COVID-19. "I study pregnancy-related diseases in women or their fetuses, and COVID-19 has implications in pregnancy," she says. "So now I have made my focus studying COVID-19 in pregnancy, changing my research lens to look at what now is an acute public-health need."

The hiatus from the labs also offered some unanticipated upsides. "I think a lot of our researchers shifted gears and were able to pursue some things that they'd wanted to do but didn't have time for," Dr. Smale says.

That is true for Dr. Afshar. "We started asking different questions," she says. "We spent more time writing and working off campus. We finished publications that had been sitting on our desks for a long time that we should have been working on. I think it really showed the scientific community how we can be progressive and iterative in addressing clinically relevant questions, not necessarily at the bench but by utilizing the data we already have."

WHILE THE RESEARCHERS ARE ANXIOUS TO GET BACK INTO THEIR LABS, the trade-offs that had to be made during the shutdown may continue to ripple into the future. Take, for example, Zoom, the now ubiquitous online meeting platform. "In the beginning of this, we weren't very good at it," Dr. Carmichael says. "But we have gotten better. A lot of science, and a lot of scientific meetings, can be done remotely, and perhaps that will turn out to be a good thing."

Sure, the scientists would like to be able to go back to how things were before COVID-19 — "You really can't replace meeting with your colleagues one-on-one," Dr. Wang says — but "I also think we have learned how to work more efficiently with telecommunication platforms."

The takeaway, Roger Wakimoto, PhD, vice chancellor for research and the architect of the research ramp down/ramp up, is that it's not always necessary to meet face-to-face. "So often, people fly in from other parts of the country, we sit at a table and we sign documents," he says. All that now can be done online. "There was a learning curve, and we're still figuring it out, but we now know what the banks have known for some time: You don't have to be sitting in front of someone else to sign a document."

One open question that remains, even as UCLA's researchers resume their work in the labs, is how to welcome new students into those laboratories this fall. "Will the logistical challenges make labs reluctant to take in new students?" Dr. Smale asks. "Hopefully, faculty will find ways to welcome and train our new PhD candidates and medical students, while adhering to our strict protocols, to ensure the safety of everyone in our laboratories."

Dr. Wang says his team members' resilience, eagerness to join the fight against the pandemic and willingness to embrace new ways of working are what's kept the morale high and wheels in motion on both new and old projects. "They found ingenious ways to improve the safety of the lab while performing experiments," he says. "I'm happy to see that the outcomes of those improvements really paid off. Our lab has actually been very productive, probably one of the most productive times for us in terms of publications, grants and so forth. I am grateful to them, and they are the true heroes."

Marrecca Fiore *is a senior media relations officer for UCLA Health and a former print and broadcast health reporter.*

"I think a lot of our researchers shifted gears and were able to pursue some things that they'd wanted to do but didn't have time for."

The Day After

By Veronique de Turenne

Illustrations by Lucy Rose

The COVID-19 pandemic will pass, but what will happen next?

For thousands of years, plagues and pandemics have savaged the civilized world. And each time, they've brought about lasting change.

When the coronavirus pandemic began, toilet paper became the unofficial icon of locked-down life. Shoppers stripped grocery shelves bare. Perpetual handwashing, along with the fruitless search for hand sanitizer, soon followed as symbols of an altered world. Today, the toilet paper aisles are mostly restocked. But, as the shape and scope of our lives continue to shift, the question becomes: Where does all of this lead?

"The pandemic has clearly upended all of our lives," says Gary Small, MD (FEL '83), professor of psychiatry and biobehavioral sciences and the Parlow-Solomon Professor on Aging at the David Geffen School of Medicine at UCLA. "It's been an assault, and the world as we knew it is profoundly different. But people are resilient, and as this goes on, we're adapting."

For thousands of years, plagues and pandemics have savaged the civilized world. And each time, they've brought about lasting change. It was during the Black Death in the 14th century, which wiped out nearly one-third of the world population, that the city of Venice conceived the concept of quarantine. The word comes from the 40 days — *quaranta giorni* — that incoming ships were forced to sit at anchor before sailors were allowed to come ashore.

Recurring cholera pandemics throughout the 1800s, which at that time were blamed on noxious air, led to a building spree of wide city boulevards and vast urban green spaces. That's the genesis of Central Park in New York, which landscape architect Frederick Law Olmsted believed would give city residents access to healing fresh air. After the 1918 influenza pandemic claimed 50 million lives, governments throughout the world began to develop centralized health care systems. Some historians argue that the scapegoating of black South Africans during that time sowed the seeds for the legislated racism of apartheid.

Months into this newest pandemic, we have come to view daily life through a lens of health and safety, if not in terms of life and death. Work, travel and worship potentially can be fatal. Even the most basic pleasures — an evening out at a restaurant, sitting together and chatting with friends, blowing out candles on a birthday cake — can pose a serious risk. Instead of connection, we now see contagion. And, as the COVID-19 pandemic grinds on, its effects are profound.

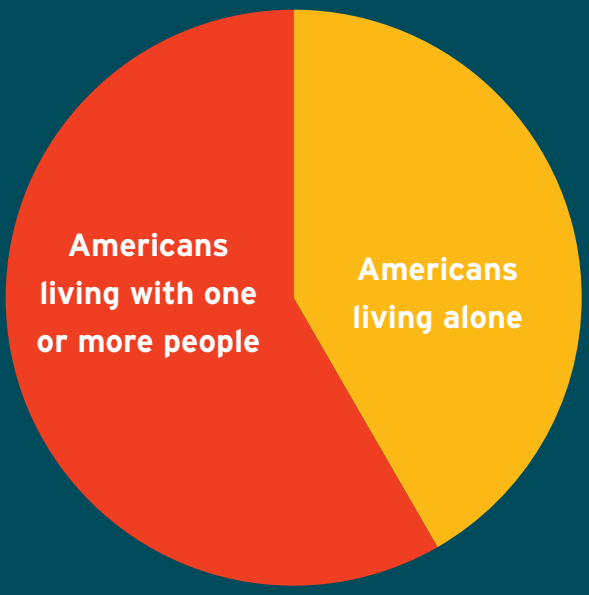
Take, for example, the social nicety of the handshake. A near-universal form of greeting in the U.S., shaking hands quickly became off-limits

as the coronavirus spread. Its absence has left an awkward void of nodding, bowing and, for some people who just can't help but touch, the particular weirdness of the elbow bump. For Mark Sklansky, MD, chief of pediatric cardiology at UCLA Mattel Children's Hospital, the end of the handshake is welcome news. He has long been a clarion voice advocating against handshakes, which he sees as natural spreaders of infection. "Our hands are warm and wet, and they are very efficient at transmitting disease," Dr. Sklansky says. "The handshake is a relic from centuries ago, and the fact is that hands represent an excellent vector for disease."

He has encouraged no-handshake zones, particularly in certain clinic and hospital settings, to protect vulnerable patients, and followed up with a no-handshake music video on YouTube. Our current reality has transformed the handshakes-as-disease-vector paper he published in the *Journal of the American Medical Association* in 2014 from fringe thinking to prophecy. "That was certainly not the case a few years ago, when people laughed at this view, even in the medical setting," Dr. Sklansky says. "The fact that it has become intuitive now to avoid a handshake shows that people's thinking has come a long way."

Previous pandemics have failed to wipe out the handshake. But Dr. Sklansky holds out hope that this one may bring lasting change. He points out that, thanks to public education and a clear link to heart/lung disease and cancer, the rate of cigarette smoking decreased significantly in the U.S during the latter part of the 20th century. In the meantime, he advocates for the "namaste" gesture of a slight bow over hands pressed together at the heart. "What's important is eye contact, and even a smile," he says. "A person's humanity and kindness need to come through."

"The handshake is a relic from centuries ago, and the fact is that hands represent an excellent vector for disease."



Close to one-third of all Americans (more than 35 million people) now live alone.

With **in-person contact** from work, shopping, socializing and recreation now **off-limits** and rife with risk, the result is a marked **uptick** in **anxiety, depression** and other **mental health problems**.

Research has found that people who are **isolated** and **chronically lonely** develop **heart disease** at **higher rates** than do those with strong **social connections**.

They're more **vulnerable** to a range of other serious **health issues**, including metastatic cancer, an **increased risk** of stroke and higher rates of **neurodegenerative diseases**, such as **Alzheimer's** and other types of **dementia**, than the general populace.

"We know from past national disasters that mental health in general suffers. About 10 percent of people may go on to develop ongoing psychological problems, such as depression, anxiety disorders and post-traumatic stress."

AMONG THE MORE TROUBLING CHANGES BROUGHT ON BY THE PANDEMIC has been the explosion in isolation and loneliness. Close to one-third of all Americans — that's more than 35 million people — now live alone. With in-person contact from work, shopping, socializing and recreation now off-limits and rife with risk, the result is a marked uptick in anxiety, depression and other mental health problems..

Over the long term, the physical toll of this type of social isolation is steep. Research has found that people who are isolated and chronically lonely develop heart disease at higher rates than do those with strong social connections. They're more vulnerable to a range of other serious health issues, as well. These include metastatic cancer, an increased risk of stroke and higher rates of neurodegenerative diseases, such as Alzheimer's and other types of dementia, than the general populace. Adults who are chronically lonely are more likely to die a premature death. And for older adults, who are at markedly higher risk of grave illness due to COVID-19, this pandemic has proven to be a double threat. Studies show that elderly people who are isolated and lonely die at significantly higher rates than those who are socially connected. Yet, now they've been forced to withdraw from most forms of human contact in order to preserve life.

"We know from past national disasters that mental health in general suffers," says Emanuel Maidenberg, PhD, clinical professor of psychiatry and biobehavioral sciences and director of the Cognitive Behavioral Therapy Clinic at the Semel Institute for Neuroscience and Human Behavior at UCLA. "About 10 percent of people may go on to develop ongoing psychological problems such as depression, anxiety disorders and post-traumatic stress."

The wild card here is the unprecedented length of this pandemic, and the ongoing uncertainty that surrounds it. "It is impossible to know the long-term consequences of an event of this kind, One of the challenges is that, when we're isolated from others of different ages and races and ways of thinking, so much is lost," Dr. Maidenberg says. "But I suspect

Adults who are **chronically lonely** are more likely to die a **premature death**. And for older adults, who are at markedly **higher risk** of **grave illness** due to **COVID-19**, this pandemic has proven a **double threat**.

Studies show that elderly people who are **isolated** and lonely **die** at **significantly higher rates** than those who are **socially connected**. Yet, now they've been forced to **withdraw** from most forms of **human contact** in order to preserve life.

that in the long run, the majority of the populace will do well. We humans have a level of resilience that carries us through these types of events, and even helps us find new meaning in life."

That is an assessment with which Dr. Small would concur. "It is important for all of us to become aware of our friends and neighbors in need and to make that effort to reach out," he says. Dr. Small holds out hope that helping the lonely and vulnerable among us will take hold as a lasting habit, even after the pandemic has passed.

One group hit particularly hard by the challenges of social isolation is new moms, says Melissa Brymer, PhD, PsyD, a psychologist and program director with the UCLA-Duke National Center for Child Traumatic Stress. Routine medical appointments and support services have become a logistical nightmare. Perhaps even more challenging is the loss of support from friends and neighbors and family members. The first weeks and months with an infant are already a stressful time, filled with physical rigor and emotional vulnerability. "Nurses spend a lot of time with new moms in the hospital, and what's happened now is that they're in more protective gear, and we're hearing from new moms that it takes away from personal intimacy," Dr. Brymer says. "Nurses are still supportive, but a new mother can no longer see their smiling faces. The nurses have had to adjust their body language and behavior for their warmth and reassurance to project."

The challenges continue at home, too. Without a supportive community eager to admire and hold the new baby, to share stories and lend a helping hand, new mothers have been left to fend for themselves. The result has been a shift in new-mom culture. "They're posting baby pictures to social media, having lactation consultations online, having the food-train casserole left on the doorstep rather than in the kitchen, with a friendly chat," Dr. Brymer says. "There's a tipping point between risk mitigation and trauma, and everyone is having to adjust to find the right balance."

TO UNDERSTAND WHICH, IF ANY, OF THESE NEW BEHAVIORS MIGHT CONTINUE INTO THE FUTURE, it is helpful to look to the past. Take, for example, the reluctance among many people to wear a mask. Such resistance can be baffling to those who believe that wearing a mask can protect against spreading the virus, particularly to vulnerable populations, but it turns out this kind of response is not new. Strikingly similar scenes played out throughout the influenza pandemic in 1918 after elected officials in California ordered the closure of schools, theaters, restaurants and saloons.

As a deadly second wave of the influenza pandemic gathered steam in October of that year, San Francisco's Board of Supervisors enacted a mandatory mask ordinance. Despite initial good results, the city's residents soon rebelled. They not only ditched their masks, they organized and formed the Anti-Mask League. News reports of the day, chronicled in history books about the pandemic, show the group held a gathering of 2,000 unmasked sympathizers in an indoor arena. While there, they questioned the severity of the pandemic. A physician who preached the gospel of masks became the target of angry protestors, including one who attacked him with an explosive device — it failed to go off. The unsurprising result of this failure to unify against the disease was a lethal surge in new cases of influenza. By the time the pandemic finally wound down, San Francisco emerged as one of the hardest-hit cities in the U.S.

It is true that, to a certain extent, such contrarian behavior, even in the face of a clear-and-present

"There's a tipping point between risk mitigation and trauma, and everyone is having to adjust to find the right balance."

"All the way back to the 1920s, people had been instructed to put their hand on their mouth whenever they were going to cough or sneeze. But now, due to changed behaviors adopted during the 2009 H1N1 pandemic, you cough not into your hand but into your elbow."

danger, can be chalked up to the vagaries of human nature. But Howard Markel, MD, PhD, George E. Wantz Distinguished Professor of the History of Medicine at the University of Michigan in Ann Arbor and director of the university's Center for the History of Medicine, says that how a message is delivered to the general public also plays a role in how it ultimately is received. "Over the last century, there have been all sorts of creative ways, from posters to slogans to public-service announcements, that teach and encourage people to behave better," he says.

He points to post-World War I campaigns in favor of toothbrushing, which moved the compliance needle from seven percent at the start of that century to more than 65 percent by the 1930s. In the coronavirus era, Dr. Markel is a fan of comedian and TV polymath Larry David's often-profane public-service announcements. While promoting the need to wear a mask, and chiding those who refuse to do so, David sarcastically couches the benefits of self-quarantine in terms of a chance for limitless time in front of the TV.

On a more serious note, Dr. Markel points to a successful behavioral change — sneezing or coughing into one's elbow — that emerged in response to mitigation efforts during the 2009 H1N1 (swine flu) pandemic. "Prior to that time, all the way back to the 1920s, people had been instructed to put their hand on their mouth whenever they were going to cough or sneeze," Dr. Markel says. "But now, due to changed behaviors adopted during the 2009 pandemic, you cough not into your hand but into your elbow."

A serious challenge to that type of messaging today is the fraught and fragmented landscape of public discourse. Information bubbles, chosen to match each person's pre-existing beliefs, preach to the converted. Add in the fact that the novel coronavirus is, well, novel, and so we are learning on the fly, and recommendations evolve according to new information, and, thus, a certain level of chaos is inevitable. "Information gets buried in a fog of war," Dr. Markel says. "Without a coherent narrative, you don't get all of the details. You won't ever learn the science of it."

SO WHAT HAPPENS IN A POST-COVID WORLD? Is such a thing even possible? In a best-case scenario, the development and deployment of a successful vaccine remains months away. And even as researchers around the world work at an accelerated pace to develop one, questions about a potential vaccine's efficacy remain. Due to the nature of the novel coronavirus, it won't match the success of the smallpox vaccine, which stamped out that disease. Nor will it offer the near-total protection of the two-dose measles vaccine. Even if things go well with manufacture and delivery, there's the wild card of the anti-vax movement. Bottom line: COVID-19 likely will continue to define our lives for years to come.

"The reality, of course, is that social distancing cannot cure or defeat COVID-19. It only allows us to hide from the virus while scientists do their work," Dr. Markel — whose 83-year-old mother died in February after contracting COVID-19 — wrote in *The New Yorker* in August. "The overwhelming majority of Americans — perhaps as many as 300 million people — are still susceptible to infection. As they venture back into a reopened world in which the virus is still circulating, they are at risk."

Andrea Bertozzi, PhD, Distinguished Professor of Mathematics and holder of the Betsy Wood Knapp Chair for Innovation and Creativity in the UCLA College, has the numbers to back up Dr. Markel's assessment. Along with fellow scientists and mathematicians, she has examined a trio of mathematical models and seen a potentially distressing future. In a study published in April in the *Proceedings of the National Academy of Sciences,* Dr. Bertozzi and her team reported that, unless physical-distancing measures remain in place until a viable vaccine is ready for release, the nationwide sacrifices to flatten the curve will have been squandered. Without continued vigilance by everyone living in the U.S., the number of resulting coronavirus infections may turn out to be of similar magnitude as if the lockdown and subsequent distancing had never happened.

"Distancing efforts that appear to have succeeded in the short-term may have little impact on the total number of infections expected over the course of the pandemic," says Dr. Bertozzi , who also is Distinguished Professor of Mechanical and Aerospace Engineering. "Our mathematical models demonstrate that relaxing these measures in the absence of pharmaceutical interventions may allow the pandemic to reemerge. It's about reducing contact with other people, and this can be done with PPE as well as distancing. As a nation, we still are in the early stages of understanding the best methods to protect the general population. But it is clear that infection spread can be controlled in a hospital setting, so this means there are ways to mitigate the spread in the workplace, as well."

Health experts surmise that habits like hand-washing and the use of hand sanitizers will become permanent. Hugs and handshakes will likely return, but for a while, at least, we'll be keenly aware of the risk. Remote learning and remote working are likely to continue even when the pandemic has passed.

In fact, many experts suggest the workplaces of the future will be gradually but profoundly transformed. Outdoor spaces, so much safer than indoor venues, will continue to be a top choice for gatherings both large and small. In the meantime, as we wait for that elusive post-COVID world, we each do our best and cope.

Dr. Small's family found a way to move a cherished weekly card game with friends online. Others have rediscovered retro pleasures like nightly family dinners and frequent movie nights. More recently, drive-in theaters, once bound for extinction, have made a social-distancing comeback. Older adults have learned, and even embraced, app-based visits through Skype and Zoom and Facetime. "You have these little moments where you get beyond the challenges, and that's good," he says. "You feel a sense of empowerment that you can still live a full life."

And Dr. Small is working to remain hopeful. "It's gradual, but we're adapting," he says. "We're resilient, and although it takes work and time, we are adjusting to this new normal."

Veronique de Turenne *is a freelance writer in Los Angeles.*

"The overwhelming majority of Americans — perhaps as many as 300 hundred million people — are still susceptible to infection. As they venture back into a reopened world in which the virus is still circulating, they are at risk."

To read Dr. Mark Sklansky's no-handshake article in the *Journal of the American Medical Association*, go to: tinyurl.com/JAMA-no-handshake

To view Dr. Sklansky's no-handshake video, go to: tinyurl.com/No-More-Handshakes

To read Dr. Andrea Bertozzi's study in the *Proceedings of the National Academy of Sciences*, go to: tinyurl.com/PNAS-Physical-Distancing

From Africa to Westwood

By David Geffner

As an officer with the Epidemic Intelligence Service of the Centers for Disease Control and Prevention, Dr. Annabelle de St. Maurice investigated outbreaks of infectious diseases in Africa, South America, the Caribbean and the United States.

Photo: Kay Hinton

Annabelle de St. Maurice, MD, MPH, had just completed a fellowship in pediatric infectious diseases and earned her master's degree in public health at Vanderbilt University School of Medicine In Nashville, Tennessee, when she embarked on a new journey as an officer with the Epidemic Intelligence Service of the Centers for Disease Control and Prevention (CDC). That was in July 2015. A month later, Dr. de St. Maurice landed at Conakry International Airport in the Republic of Guinea during the Ebola epidemic that had swept through West Africa.

Having grown up in a bilingual French-English-speaking home, her language skills were particularly valuable in a country where French is the official language, and "there was a need for French-speaking physicians to help combat Ebola," she says. She checked in to the best hotel in the capital city, but "that only lasted a few days," Dr. de St. Maurice says. "I was sent by truck a few hours north to a remote town, where I was the only person from the CDC."

Together with local teams, she worked to build a structure for infection-prevention audits at nearby clinics. "It was unlike anything I'd experienced, as I saw, up close, the challenges of getting PPE (personal protective equipment) distributed to slow this highly infectious virus. I was able to use my French-language skills to help people like I had never done before."

The time she spent in Guinea was among Dr. de St. Maurice's many formative experiences along her road to become co-chief infection prevention officer for UCLA Health and a key architect of UCLA's response to the COVID-19 pandemic. During her time in West Africa, the issue of PPE for health care workers fighting Ebola was similar to what she would experience five years later with SARS-CoV-2, the virus that causes COVID-19.

More assignments with the CDC followed. After she completed her work in Guinea, Dr. de St. Maurice was sent to Uganda to investigate an outbreak of Rift Valley Fever, another viral hemorrhagic fever that is common in cows and goats. "We visited abattoirs where the animals were being slaughtered — a messy affair with blood and potential bodily fluid transmission — and tested [those doing the slaughtering] for antibodies," she recalls.

There also were projects abroad with the Viral Special Pathogens Branch of the National Center for Emerging and Zoonotic Infectious Diseases in Liberia, Brazil and Haiti. Closer to home, she investigated an outbreak of Seoul virus — a variant of the hantavirus family that is transmitted to humans from wild rodents but in this case came from rats bred as pets or for food for other animals — in Wisconsin and Illinois. The virus is so rare, only the CDC has the capability to conduct a conclusive test. "It usually is only seen in Southeast Asia, but after investigating, we found a large number of rat breeders were testing positive," she says. She and her fellow investigators created recommendations for breeders, pet stores and vets across the U.S who came into regular contact with rats. "The challenge with any novel pathogen is you have to come up with mitigation measures as the outbreak is unfolding," Dr. de St. Maurice says. "That's not something you normally would have to do in clinical care."

All of that experience came to the fore when the COVID-19 pandemic officially arrived in the U.S. "We had been talking about SARS-CoV-2 since January, when the virus was first identified in China. When we realized how quickly it was spreading, we started thinking about how we would approach patients here with COVID-19," Dr. de St. Maurice says. Working with Daniel Uslan, MD, clinical chief for infectious diseases and co-chief infection prevention officer, Dr. de St. Maurice has been working overtime since then to manage the potential spread of the virus within UCLA's hospitals and clinics.

"We've worked to keep patients safe while in the hospital, as well as ensuring that central lines and other invasive medical devices don't transmit infection," she says. "We've never run out of PPE [during outbreak peaks of SARS-CoV-2]. We did a lot of early training on how to put on and take off PPE, to help minimize transmission, and it worked."

Public health, Dr. de St. Maurice says, is always a team sport. "I've been at UCLA for two-and-a-half years, with the same small group," she says. "Then along comes COVID, and I'm on daily Zoom calls with virtually every physician across the hospital, being part of a large team."

As she learned in West Africa, "the knowledge gained [during an outbreak] and the recommendations made are always evolving. Clear and constant communication, in a language everyone can understand, is key," she says.

Since the beginning of her career in medicine, Dr. de St. Maurice has been focused on population health. "I chose medical school at the University of Rochester because they had an emphasis on a bio-psycho-social model, which focuses on how our health is affected by the communities around us," she says. "Vandy" — Vanderbilt University — "is where I fell in love with epidemiology," as she studied rates of invasive pneumococcal disease in Tennessee.

Another of her missions while with the CDC was to conduct a data analysis with the health department of the Navajo Nation to identify risk factors for becoming infected with hantavirus. "Our nationwide data showed those working outdoors made up a significant number of cases, home exposure was more common among those residing in Western states and Native American women had the highest mortality," she says. "That information was used to help alert people to the precautions they needed to take in their homes or workplace to prevent occupational infections.

"That experience, as in Guinea and at UCLA with SARS-CoV-2, was so inspiring," Dr. de St. Maurice says. "It is wonderful when health care professionals from across disciplines align for the same mission to help people."

David Geffner *is a freelance writer in Los Angeles and executive editor of* ICG Magazine.

Top: As part of her work with the CDC, Dr. Annabelle de St. Maurice (left) investigated an outbreak of Rift Valley Fever in Uganda.
Bottom: While in Uganda, Dr. de St. Maurice took time to observe gorillas in the wild.

Photos: Courtesy of Dr. Annabelle de St. Maurice

Awards & Honors

Dr. Tracy Daniels-Wells, adjunct assistant professor in the Division of Surgical Oncology and a member of the UCLA Jonsson Comprehensive Cancer Center, received the American Association for Cancer Research Minority and Minority-serving Institution Faculty Scholar in Cancer Research Award.

Dr. Judith Gasson, professor emerita and senior adviser for research and innovation to the David Geffen School of Medicine at UCLA, received the 2020 American Society of Hematology Basic Science Mentor Award.

Dr. Willy Hugo, assistant professor of dermatology and a member of the UCLA Jonsson Comprehensive Cancer Center, received the American Association for Cancer Research-Bayer Innovation and Discovery grant.

Dr. Anusha Kalbasi (MD '11), assistant professor of radiation oncology and a member of the UCLA Jonsson Comprehensive Cancer Center, was named a 2020 Damon Runyon Clinical Investigator by the Damon Runyon Cancer Research Foundation.

Dr. Clara Lajonchere, deputy director of the Institute for Precision Health at UCLA Health, was elected chair of the newly established California Precision Medicine Advisory Council.

Dr. Antoni Ribas (FEL '98, '01), director of the tumor immunology program at the UCLA Jonsson Comprehensive Cancer Center, was inducted into the 2020 class of Fellows of the American Association for Cancer Research Academy.

Dr. Cristina Puig Saus, adjunct assistant professor of medicine and hematology/oncology and a member of the UCLA Jonsson Comprehensive Cancer Center, received the American Association for Cancer Research NextGen Star Award.

Johnese Spisso, MPA, president of UCLA Health and CEO of the UCLA Hospital System, was recognized by *Modern Healthcare* as one of this year's 50 Most Influential Clinical Executives.

Dr. Moira Szilagyi, chief of general pediatrics and section chief of developmental pediatrics, was elected president of the American Academy of Pediatrics beginning in January 2021.

Dr. Peter Tontonoz, Frances and Albert Pianksy Chair in Anatomy and professor in the departments of pathology/laboratory medicine and biological chemistry, was elected as a member of the National Academy of Sciences.

In Memoriam

Dr. Donald P. Becker, W. Eugene Stern Professor in Neurosurgery who served in many leadership positions, including chief of the UCLA Division of Neurosurgery, director of the neurosurgery residency training program and senior associate dean of academic affairs, died May 1, 2020. He was 84 years old. Dr. Becker first came to UCLA in 1968 as chief of neurosurgery at Harbor General Hospital. His early work in the use of intracranial pressure monitoring in patients with tumors, vascular disease and trauma remains the basis for current treatment. UCLA's Donald P. Becker, M.D. Term Chair in Neurosurgery was established in his honor in 2019.

The COVID-19 Pandemic through Their Eyes

Alumni of the David Geffen School of Medicine at UCLA working on campus and elsewhere offer their perspectives on the COVID-19 pandemic.

Dr. Risa Hoffman.

Photo: UCLA Health

Risa Hoffman, MD '00 (FEL '07), MPH

Associate Clinical Professor of Infectious Diseases and Director of UCLA's Global Health Program

"This pandemic has really highlighted health disparities both locally and globally. Many of our global-health partnerships are in places with extremely limited resources where they are having large outbreaks. It has magnified the importance of strengthening health systems as part of the work that we do in global health. It is sobering that many of the difficulties we see when sending clinicians to places like rural Africa – making choices between who lives and dies, who gets medication, how to deal with the shortage of personal protective equipment – have been mirrored here in the United States. I think this has highlighted the need for us to make the connection between our local context and the global context in which we provide opportunities. We need to advocate for health equity right here at home as much as we need to help in other places, and empower our students to address health disparities in their own communities. It is a critical time for this work, and the silver lining is our heightened awareness of what we need to do locally, right here in Southern California."

Dr. Abraar Karan.

Photo: Courtesy of Dr. Abraar Karan

Abraar Karan, MD '16, MPH

Internal Medicine Physician, Brigham and Women's Hospital and Harvard Medical School and Medical Fellow to the Massachusetts Commissioner of Public Health

"As a practicing doctor, I can see where public policies may have loopholes. And understanding the political and sociological nature of the epidemic has been very important to me; as a holistic doctor, that matters to me now more than ever. At the beginning of the pandemic, we probably underestimated the level of home-based transmission and how difficult it was for people to isolate. The vast majority of patients I cared for in the ER were infected by a family member, and I was able to bring that perspective to the State Department of Public Health. I have learned not to take chances

with this pandemic. The spread is exponential, not linear, so every day that you lose on the pandemic is worse than the day before. We live in a world of pandemics that are going to be more common with globalization and travel. The expansion of livestock industries will lead to more zoonotic transmission of previously unknown viruses and diseases, so being able to quickly transition to an emergency response is very important moving forward."

Dr. Caitlin Gomez.

Photo: Courtesy of Dr. Caitlin Gomez

Caitlin Gomez, MD '10

Radiation Oncologist, City of Hope

"I'm not on the frontlines, but interactions with patients have changed a lot during this time, and we are adapting to an unpredictable schedule. Currently, patients aren't allowed to bring family members with them for their treatment. It is difficult for all parties, as families usually have a lot of additional information to share and a lot of support to provide. Family members are often involved in an individual's care, especially when it is long term. So we are working through that new challenge. I think we're always trying to make it more convenient for patients to come in for treatment. There has been a push to shorten treatment courses, and I think that the pandemic may act as a catalyst for that work. We do have to be cautious; however, there are still treatment areas where we do not know what the long-term consequences would be with a change like this. The pandemic is also changing our approach to our own health. As doctors, we are used to working through a seasonal cold, and before, a sore throat would not stop me from coming to work, but now, every little symptom requires a careful response."

Dr. Arash Naeim.

Photo: UCLA Health

Arash Naeim, MD '95 (RES '97, FEL '98, '02), PhD

Professor of Medicine and Chief Medical Officer for Clinical Research

"Before the pandemic hit, UCLA had a portfolio of important clinical research, and it was challenging to make changes for that research as we ramped down. We had to be flexible to keep things moving, while the majority of people moved to working remote. With fewer people permitted to be on campus, we have had to be very mindful of our clinical staff and not place additional burdens on them. With everything moving at warp speed, it has provided some interesting challenges, but it also has demonstrated how we can get together as a community and work on a common goal. UCLA Health is closely aligned with the main campus, so many of the concerns we have had to address — obtaining personal protective equipment, maintaining supplies — have been addressed by leveraging our sister schools on campus, such as engineering. For a period of time, all of the 3D printers in the UCLA Samueli School of Engineering were buzzing, making as many plastic face shields as possible. UCLA has always allowed people to be innovative and entrepreneurial, encouraging out-of-the-box thinking. These are very important characteristics in general, but even more so in a time of emergency, when you need people to find answers when traditional options are unavailable. It is also very important that we focus on the psychological impact of this pandemic. There are important avenues that everyone is focused on, such as treatment and vaccines, but, we also need to look at long-term mental effects on children and pandemic-related depression. These are really important areas that are going to require attention as time goes on."

To learn more about UCLA Global Health Program, go to:
worldhealth.med.ucla.edu

Notes thanking and encouraging UCLA frontline workers poured in during the pandemic.

Photo: Courtesy of UCLA Health

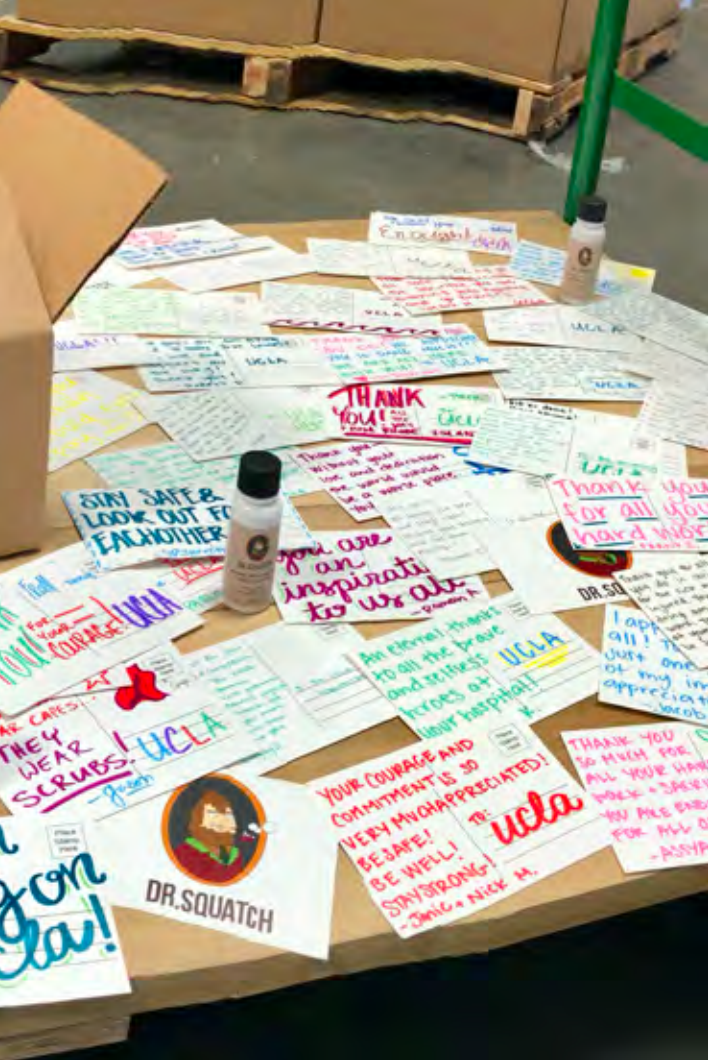
Philanthropic Giving Supports UCLA COVID-19 Relief Efforts

Amid the ongoing directives of physical distancing, sheltering in place and wearing masks due to the COVID-19 pandemic, UCLA philanthropic partners continued their giving to support personal protective equipment (PPE) for the frontline health care workers and research to speed the path to treatments and a vaccine for the novel coronavirus. Since the pandemic began, the university has received 3,470 cash gifts specifically for COVID-19 relief totaling more than $17 million, in addition to numerous in-kind gifts.

The **W. M. Keck Foundation** stepped forward with the largest single gift to date to help combat the pandemic, a $2 million contribution to the UCLA W. M. Keck Foundation COVID-19 Research Fund. This is supporting basic-science projects aimed at understanding the SARS-CoV-2 virus and the mechanisms by which it causes disease, developing new methods to detect infection, understanding why some individuals are more susceptible to life-threatening disease than others and developing effective new therapies to treat COVID-19 infection.

With this support, and the donations from numerous other philanthropists, the David Geffen School of Medicine at UCLA is catalyzing transformative research and funding more than 40 projects to develop novel diagnostics and lifesaving therapeutics and prevention strategies.

"As the threat of COVID-19 became known, scientists in the David Geffen School of Medicine at UCLA immediately began mobilizing high-impact research to identify an effective way to test for SARS-CoV-2, determine how the coronavirus develops and discover pathways to overcome it," said Dr. Kelsey C. Martin, dean of the David Geffen School of Medicine at UCLA and Gerald S. Levey, M.D., Endowed Chair. "We are deeply grateful to the generous members of our community who have



contributed vital resources to our COVID-19 research efforts, altering the course of this pandemic and shaping the future of our city and world."

Other giving included in-kind donations of 2 million PPE, such as face shields and coverings, N95 and surgical masks and protective eyewear, and gifts directed to patient care, research, education and mental health. More than 36,000 food items were donated, and UCLA's partnership with Help Feed the Frontline Fighting COVID-19 in Los Angeles provided almost 22,000 meals. Philanthropic partners also donated hand sanitizers, thermometers and care packages.

"The support of our donor community in the face of the COVID-19 pandemic has meant so much to our health care providers and staff," said Johnese Spisso, MPA, president of UCLA Health, CEO of the UCLA Hospital System and associate vice chancellor of UCLA Health Sciences. "We are grateful for this outpouring of gifts that helps us meet the needs of our patients."

For more information, contact Ellen Haddigan-Durgun at:
310-321-8366

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To support UCLA's COVID-19 response, go to:
uclahealth.org/Giving/covid-19-philanthropic-support

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COVID-19 Coronavirus Research and Education fund
tinyurl.com/research-and-education-fund

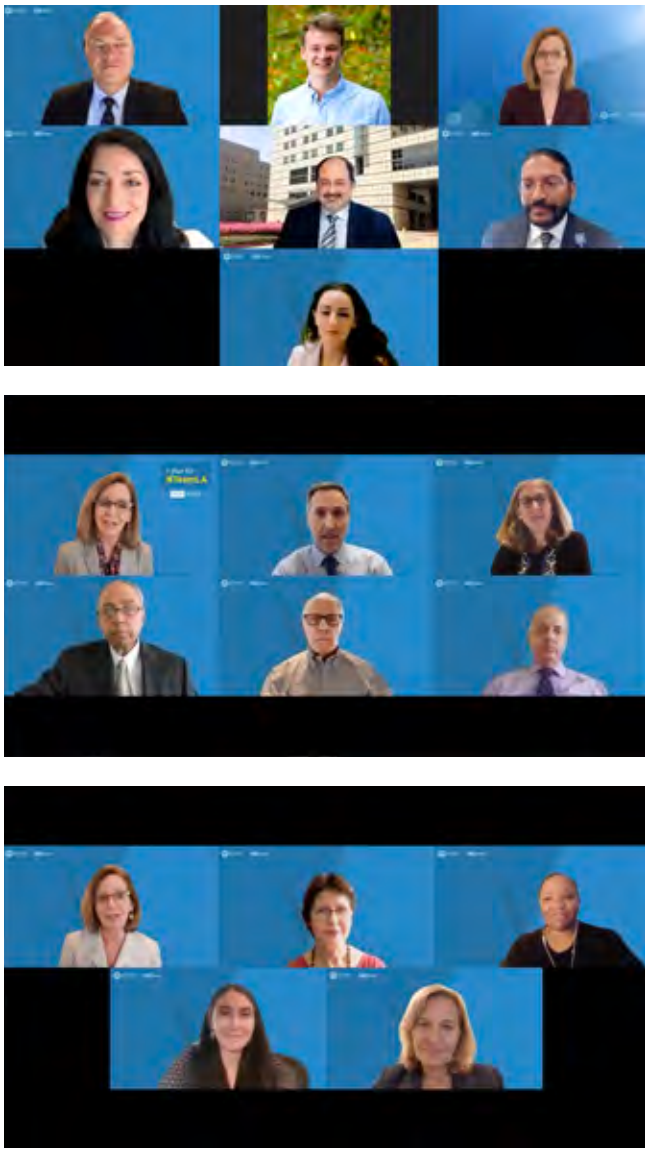
Your COVID-19 Questions Answered

As the Los Angeles community and the world learn to navigate uncertain times, the novel coronavirus pandemic has prompted many questions. When can I visit my grandchildren? Do I need to wipe down my mail? How long until a vaccine is available? How do I cope with isolation and anxiety? To answer questions like these, UCLA orchestrated an online speaker series, *Your COVID-19 Questions Answered*, featuring experts from the **David Geffen School of Medicine at UCLA** and **UCLA Health**.

To date, more than 1,600 people have attended one or more parts of the series, which began in May with segments hosted by UCLA leaders, including Dr. Kelsey C. Martin, dean of the David Geffen School of Medicine at UCLA and Gerald S. Levey, M.D., Endowed Chair; Johnese Spisso, MPA, president of UCLA Health, CEO of the UCLA Hospital System and associate vice chancellor of UCLA Health Sciences; and Dr. John C. Mazziotta (RES '81, FEL '83), vice chancellor of UCLA Health Sciences and CEO of UCLA Health. The series is moderated by Judy Fortin, executive director of communications for UCLA Health.

Event attendees hail not only from California, but also from locations across the country and around the globe. Each session, held via Zoom, focuses on a particular COVID-19-related topic, such as testing, clinical care and immunology, and include expert panelists to address attendees' questions, submitted beforehand and in real time. "In some ways, this global pandemic is bringing us closer together, even while we're physically apart," Spisso said during a session.

During the third session, which focused on immunology, Dr. Mazziotta spoke about the development of I3T, the Immunology, Inflammation, Infection, and Transplantation research theme at the David Geffen School of Medicine. "We've been at this for some time, and when the COVID-19 pandemic arrived, we were able to quickly develop our own viral testing and launch many research projects and clinical trials," he said. "Our knowledge of the immune system has reached the point where almost every new basic-science discovery could lead to an effective and practical treatment, from cancer to food allergies to autoimmune disorders, even aspects of aging. These discoveries and treatments lead to advances regularly."



Faculty experts join UCLA Health and David Geffen School of Medicine at UCLA leaders to answer COVID-19-related questions from the public.

Photos: UCLA Digital Technology

What initially started as a three-part series was expanded due to overwhelming demand. A fourth session on mental health was held in July, and, in response to the plethora of questions about supporting children's social, emotional and educational development during COVID-19, an August event targeted children's health. Additional sessions are forthcoming.

"UCLA and the David Geffen School of Medicine have come together in a collaborative manner and put together a very clear organizing infrastructure that will bring the expertise that's needed to address all of these issues, whether it's developing at-home tests, therapeutics or a vaccine," Dr. Martin said.

For more information, contact Jamie Lynn at:
310-983-3033

To view videos of the recorded sessions, go to:
tinyurl.com/COVID-Questions-Answered

Gifts

Pamela Buffett has contributed $1 million to the Vatche and Tamar Manoukian Division of Digestive Diseases in the David Geffen School of Medicine at UCLA. Made through the Rebecca Susan Buffett Foundation, established in memory of Pamela Buffett's daughter Rebecca Susan Buffett, this gift will honor Dr. Gary Gitnick, professor emeritus, for his remarkable legacy at UCLA, and Dr. Eric Esrailian (FEL '06), chief of the UCLA Vatche and Tamar Manoukian Division of Digestive Diseases and Lincy Foundation Chair in Clinical Gastroenterology. Dr. Gitnick retired after 50 years at UCLA, during which he served as chief of the division for 25 years. This funding will support groundbreaking research, rigorous training of future leaders in the field, patient care and service to the community, including vulnerable populations throughout Los Angeles.

The **William D. Feldman family**, has made a $250,000 contribution to the David Geffen School of Medicine at UCLA in memory of Joan Blum Feldman. The gift will support the ovarian cancer research of Dr. Beth Y. Karlan (FEL '89) in the UCLA Department of Obstetrics and Gynecology.

Leah and **Sam Fischer**, longtime donors and dedicated UCLA School of Law alumni, have contributed $250,000 to establish the Leah and Sam Fischer Scholarship. The first of its kind, this scholarship is specifically for medical students in the PRIME program in the David Geffen School of Medicine at UCLA. PRIME is a unique five-year MD and master's degree program emphasizing leadership and advocacy training to address health care disparities in medically under-resourced populations in California and the United States. The Fischers' gift will support a student with financial need, as they pursue training and community work/research to address health inequities.

Dr. John D. French.

Photo: Courtesy of the John Douglas French Alzheimer's Foundation

The **John Douglas French Alzheimer's Foundation**, an organization dedicated to supporting innovative Alzheimer's disease research, has made a contribution to establish a second endowed chair in Alzheimer's disease research in the UCLA Department of Neurology. Dr. John D. French was a distinguished neurosurgeon and the first director of the UCLA Brain Research Institute.

The **Engelstad Foundation**, longtime benefactors of medical research, made a gift of $1 million to support the UCLA Vatche and Tamar Manoukian Division of Digestive Diseases fellowship program. Although the Engelstad Foundation has supported education and research within communities in Nevada, it is the first time the foundation has provided funding to UCLA. This philanthropy is vital to enriching the division's highly competitive fellowship training program, which prepares scientists and physicians to spearhead investigations leading to discoveries in the field of gastroenterology that improve patient health and wellness.

Top: Drs. Amanda Gulsrud (left) and Daniel Geschwind. **Bottom:** (from left): Dr. Elizabeth Laugeson, Chau Le and John Klemm.

Photo: Monica Belli Haley

On behalf of employee Chau Le and her partner John Klemm, **Northwestern Mutual Foundation** has made a contribution to benefit the UCLA Center for Autism Research and Treatment (CART) College to Career Transition Program led by Dr. Amanda Gulsrud (PhD '07) and Dr. Elizabeth Laugeson. The gift will provide resources to help young adults with autism spectrum disorder successfully transition from education to employment. The program focuses on the development of social and practical skills through interactive workshops, job coaching and workplace mentorship. On June 3, 2020, during a virtual gathering, Le and Klemm presented a check to Drs. Gulsrud, Laugeson and Daniel Geschwind (RES '95, FEL '97), director of UCLA CART. Northwestern Mutual Foundation, dedicated to improving the health, wellness and education of children and young adults, recognizes its employees' volunteer efforts by funding various nonprofits nationwide, where its employees provide mentoring and other services. Le, the new chair of the UCLA Chancellor's Society, and Klemm were instrumental in funding the College to Career Transition Program's pilot program and currently help lead the program's advisory committee in its efforts.

A gift of $100,000 from the **Anne and Arnold Porath Family Charitable Fund** has been made to support research that will evaluate clinical and survey data to describe the outcomes of hospitalized patients with COVID-19 who were admitted to the intensive care unit and/or suffered cardiopulmonary arrest. Dr. Neil Wenger (MD '84, RES '87, '90, FEL '89) and Dr. Thanh Neville (MD '05, RES '08, FEL '11) will lead the study, with a goal to help guide future patient discussions and empower informed advanced-care planning decisions. The information gained will be used to expand the project to involve multiple hospitals and develop new interventions.

The late UCLA professors emeriti **Dr. Sidney Roberts** and **Dr. Clara Szego Roberts** provided $1.5 million through their estate to establish the Sidney Roberts and Clara Szego Roberts Endowed Chair in Molecular/Cellular Endocrinology within the Division of Endocrinology, Diabetes, and Metabolism in the David Geffen School of Medicine at UCLA. Their bequest, part of a more than $10 million estate gift that also will fund scholarships for undergraduate students studying science and art, reflects the couple's backgrounds as endocrinologists committed to understanding steroid hormone action in relation to metabolism, nutrition, brain function and other areas. Dr. Andrea Hevener, appointed as the inaugural term chair holder, studies insulin signaling and estrogen action and is making significant strides in identifying disease susceptibility within obesity, type 2 diabetes, cardiovascular disease and breast cancer.

The Wyss Medical Foundation has contributed $3 million to benefit the UCLA Orthopaedic Trauma Service, under the direction of Dr. Eric E. Johnson (RES '81), the Dr. Walter and Mrs. Kathryn Mullikin Chair in Orthopaedic Surgery. This funding will advance surgeon training in orthopaedic trauma surgery and will provide support for residents to pursue research and attend conferences and lectures. In addition, the gift will fund a comprehensive study of injury patterns, operative and conservative therapy regimens and short- and long-term patient outcomes, which will lead to developments that will elevate diagnostics and surgical trauma procedures and advance patient safety.

For more information, contact Health Sciences Development at:
310-206-6484

It's Surreal

By Natasha B. Wheaton, MD

MY PLANE FROM NEW YORK WAS LANDING AT LAX WHEN I STARTED TO FEEL A LITTLE HEADACHY AND HAD A BIT OF A SORE THROAT. It was early March, and the COVID-19 pandemic was starting to make its deadly presence known in the United States, starting in Washington State and then appearing on the East Coast. I had been in Manhattan for a conference of emergency physicians when National Guard troops occupied and locked down the city of New Rochelle, about 20 miles to the north, where a cluster of the illness had erupted.

My colleagues and I had been watching, with increasing alarm, the terrible toll of this pandemic as it unfolded faraway in China and Italy, and we wondered what it would be like when it landed on our shores. Now it was here.

I had taken precautions on the plane. I wore a mask and the seat next to me was empty. I spent most of the flight reading what little medical literature there was at the time about SARS-CoV-2. I wasn't terribly concerned about my relatively minor symptoms; I had been traveling and I was stressed, concerned about my family and what might await me in the hospital. It didn't occur to me that maybe I was sick with this virus.

I started to feel worse once I got home, but I was supposed to work a shift. I called my medical director in the emergency department (ED) and reported that I felt a little sick, but not terrible, that I had just been in New York, but I didn't have a fever or a cough. Still, my medical director thought I should get tested. I was positive. I am very lucky, though. My illness wasn't severe, and I just needed some time at home in bed to recover.

My first shift back was strange. Usually, there is a kind of sizzle in the ED as the staff constantly moves among patients. This day, it was eerily quiet and there were a lot of small conversations taking place among groups of people. It was a very different energy, and there was an undercurrent of fear. That is not something you often feel among the staff in an ED. We are trained to adapt and cope and care for patients in the most difficult situations. But this felt different. Not only was there concern for our patients, there also was concern for ourselves and the potential personal risk we would be facing.

Caring for patients during the COVID-19 pandemic has been a surreal experience, says Dr. Natasha B. Wheaton, but there are some moments that bring a smile, like looking at a picture by one of her son's kindergarten classmates of a lion with a stethoscope and hearts and a big THANK YOU! "We put it in the attending break room, and it cheers everyone up," she says.

Photos: Jessica Pons

The necessity to wear personal protective equipment (PPE) makes our day-to-day work more difficult. There's a term for it: PPE fatigue. Even though I've already had COVID, I don't know if I can be re-infected, and I am very vigilant about PPE. Some of us don't take our N95 masks off for an entire shift, which means we are not able to eat or take in any fluids for at least eight hours. When a patient comes into the ED in urgent need, we can't just run into the room like we used to. We have to stand outside putting on full PPE — gowns, appropriate masks, eye protection, gloves — as quickly as possible before going in. That cuts against our instinct as frontline emergency caregivers to run toward the fire, toward someone in need.

There was a patient that EMS brought in — she was breathing very quickly and clearly was in distress. As EMS was putting her in one of our negative-pressure rooms and I was putting on my PPE, we made eye contact. She wasn't talking, but her eyes pleaded "Help me!" I wanted to rush in but I couldn't; I had to put on my PPE first. A frontline worker in the Ebola epidemic famously said: "There is no emergency in a pandemic." It is a reminder that we have to protect ourselves so that we can continue to care for our patients. Maybe it takes less than a minute to put everything on, but it feels like an eternity. Any delay in delivering patient care is hard to swallow.

The precautions don't stop at the end of my shift. That is another piece of this that makes it hard — how my professional life bleeds into my personal life and the concern I have at the end of the day for my family. When I was still sick, my husband and I talked about the best way to decontaminate after I went back to work. I have a ritual when I get home. My shoes come off in the car and I put them in a bin high up in the garage so my kids can't get to them. I've changed into a new set of scrubs before coming home; those come off right at the entrance of the laundry room, and they and my work scrubs and my hair cover and my socks go into the washing machine. Then I go directly into the shower.

One morning, I arrived for my shift, and there was a man who had been brought in during the night with a medical condition from which he was unlikely to recover. He had been stabilized, but no one from his family was there to talk with about a plan for his care. We were about to send the patient to the ICU, when the family pulled up in their car outside the ED. I went out in my PPE to talk with them.

The sun was rising and cast a soft morning light. There I was, outfitted head to toe in protective gear, having a muffled conversation through my N95 mask and face shield about end-of-life care with a distressed family huddled inside their car in the parking lot. At any other time, this would have been a typical conversation with the family of a critically ill patient. I would have sat close, reached out, hugged them. I would have made human contact. But on this day, in this pace, under these circumstances, there was none of that — no hugs, no contact, no human touch. Just heartbreak and the professional ache of having to have this difficult conversation with a grieving family while standing in a parking lot wrapped inside a protective cocoon.

No, it was not typical. Like most everything else since this pandemic began, it was surreal.

Dr. Natasha B. Wheaton (with sons Jack [left], 6, and Owen, 4) is associate clinical professor of emergency medicine and associate director of the UCLA emergency medicine residency program.

Photo: Courtesy of Dr. Natasha B. Wheaton

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