

# Five lessons we've learned about COVID-19 since the pandemic began

November 19 2020, by Leigh Hopper

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Clinical lab scientists Michael Bask and Lan “Tiffany“ Du analyze COVID-19 test samples at the Molecular Pathology Laboratory at Keck Medicine of USC. Credit: USC Photo/Ricardo Carrasco III

In less than a year since the pandemic began, two potential vaccine

candidates are on the horizon. Even as COVID-19 continues its deadly march, one thing is clear: Scientific understanding of the new coronavirus and advances in fighting it have progressed with stunning speed. Here are five key lessons we've learned about COVID-19 since it began to spread in the United States:

## **Lesson 1: Airborne virus in enclosed spaces is the major threat**

"Back in March, people were calling me to ask me how long they needed to soak the can of beans in bleach before they could bring it into the house. Everybody was sort of hypervigilant and hyperparanoid," said Paula Cannon, a Distinguished Professor of Molecular Microbiology & Immunology at the Keck School of Medicine of USC. "We've since learned that [airborne virus](#) in poorly ventilated indoor spaces—emitted by maskless people as they speak or sing or simply breathe—is the likely cause of most transmissions and the reason why indoor bars and restaurants are so risky.

"We don't like the new message because it means you've got to carry on limiting your social interaction, not seeing family and friends," she added. "But we've got to get through these next two to three months of winter. This is crunch time."

## **Lesson 2: Historically marginalized groups hit hardest by COVID-19**

"When community spread of COVID-19 first began emerging in the United States, a primary concern—and rightly so—was spread among nursing homes. We observed the heavy impact of COVID-19 illness and death among the elderly," said Erika Garcia, an assistant professor of preventive medicine at the Keck School of Medicine. "As the pandemic

progressed, additional inequities surfaced. Data indicated historically marginalized groups were being disproportionately affected by the virus.

"In New York City—an early epicenter of COVID-19 in the U.S.—Hispanic and Black people comprised 34% and 28% of deaths but only 29% and 22% of the population, respectively, according to data from the New York State Department of Health. Data from a health care system in California showed non-Hispanic Black patients had 2.7 times the odds of hospitalization compared with non-Hispanic white patients, after adjusting for age, sex, comorbidities and income. In recent months, we have seen increasing incidence and mortality among younger adults here in California, particularly among Hispanic and Black people.

"Researchers at USC and elsewhere are working to elucidate how various factors—including clinical, behavioral, community and [public health measures](#)—contribute to COVID-19 mortality disparities," she added, "so that possible interventions can be developed to decrease the disproportionate burden of the pandemic on vulnerable populations."

### **Lesson 3: COVID is more complex and can last longer than originally thought**

"When we run chest CT scans or X-rays on patients with COVID-19, we typically see scattered patchy areas of inflammation in the lungs, which we call atypical pneumonia. These patients usually suffer from a cough, difficulty breathing or chest pain, fatigue and fever," said Ali Gholamrezanezhad, an assistant professor of clinical radiology at the Keck School of Medicine.

"What we have found very surprising is that some patients with COVID-19 have no such symptoms," he added. "Instead, they present with abdominal pain or even other symptoms, such as a stroke or an eye

inflammation. Yet when we image their lungs, we find COVID-19. On the flip side, much less frequently, patients come in with a cough and fever and chest imaging reveals that the lungs are clear or have minimal signs of inflammation.

"This may have to do with the fact that COVID-19 affects almost every organ in the body, not just the lungs, as was originally thought when the pandemic first began."

Peter Kuhn, Dean's Professor of Biological Sciences at the USC Dornsife College of Letters, Arts and Sciences, notes that since COVID began, it's become clear that many people who recover from the illness face ongoing health impacts.

"New research is showing that some people are unable to return to normal activities after COVID," he said. "These 'long-haulers' have shortness of breath, extreme fatigue and a racing heartbeat. They have lung scarring or ongoing neurological issues. You don't want to get this.

"There are significant gaps in our conduct of research that would help us understand the full impact of this better. We currently have limited insights into long-term effects, as only a limited number of studies are being pursued to establish that. It is a catch-22 situation where the health care system can only start responding to this challenge after the [health care system](#)—jointly with research—has conducted the systematic research to understand the scale of the challenge."

## **Lesson 4: We can't test our way out of taking COVID-19 precautions**

"We started the epidemic with scarce testing that took too long. Now, access to rapid testing is more widely available," said Susan Butler-Wu,

an associate professor of clinical pathology at the Keck School of Medicine. "However, there's a dangerous narrative out there in which people assume that getting a negative test means it's safe to go home for Thanksgiving. All that tells you is you don't have detectable virus right now.

"You may be early in the course of infection and thus undetectable," she added. "Testing negative doesn't get you out of having to take other precautions like wearing a mask or avoiding indoor gatherings with people outside your household."

## **Lesson 5: Masks protect others—and the wearer**

"The public health messaging on masks was initially unclear and has been muddled by political arguments. However, as we learned more about this novel disease, it quickly became clear: Masks are an important part of keeping infections low and allowing businesses to remain open," said Richard Dang, an assistant professor of clinical pharmacy at the USC School of Pharmacy.

"A vaccine appears to be on the horizon and people may think masks are soon to be a thing of the past—but that's not the case," he added. "Even once a vaccine becomes available, it is going to take a long time to distribute doses and vaccinate millions of people. Thankfully, pharmacists will play a key role in helping public health, hospitals and clinics quickly accomplish this task." California Gov. Gavin Newsom signed a bill that will allow pharmacists to administer the vaccine.

"Until then," he said, "masks will continue to be an important part of the strategy for preventing infections."

Provided by University of Southern California

Citation: Five lessons we've learned about COVID-19 since the pandemic began (2020, November 19) retrieved 6 May 2024 from <https://medicalxpress.com/news/2020-11-lessons-weve-covid-pandemic-began.html>

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