

UNIVERSITY OF CALIFORNIA HEALTH

January 8, 2021 Update
COVID-19 AND 'CORONAVIRUS' UPDATES

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THE IMPACT ON OUR HEALTH SYSTEM

This is the 27th update for Regents regarding the SARS-CoV-2 virus pandemic and its impact on the University's health and academic enterprise.

We usher in 2021 against a backdrop of failed national leadership and chaos in Washington DC. In this environment, the pandemic has been relentless.

We are in the midst of the most severe surge experienced to date, with December 2020 the deadliest month of the pandemic thus far. I am very concerned that the post-Christmas, post-New Year's "surge on top of a surge," as described by Dr. Anthony Fauci of the National Institutes of Health, will lead to even worse outcomes and an even higher death toll this month.

At the same time, we have given the first COVID-19 vaccine dose to ~ 85% of frontline health care workers across University of California Health (**UCH**), and expect all remaining priority 1A personnel who want to be vaccinated will receive their first dose by early next week. Some health care workers have already begun receiving their second doses. We look forward to having a fully immunized health workforce by February.

COVID-19 BY THE NUMBERS

COVID-19 cases and hospitalizations have soared since my last update on December 4. Nationally, the number of cases now exceeds 21.2 million, and the cumulative death toll stands at 359,849, according to data from the Centers for Disease Control and Prevention (**CDC**).

California has become the epicenter of the pandemic in the United States and the world. The volume of hospitalizations and rapid rise in new patients in Southern California are straining all facilities in the region, including ours. According to the California Department of Public Health (**CDPH**), the state has more than 2.5 million cases and we have lost 28,045 people since the start of the pandemic.

More worryingly, the average positivity rate for the state has reached 15%, a significant increase from November's 6.9% average. This increase also is reflected in the SARS-CoV-2 test positivity rates for patients at UC hospitals, now at 14.57% systemwide, but individual health centers have higher rates, for example 17.02% at UCLA Health and 30.11% at UCI Health.

On December 29, the [Knight Lab](#) at UC San Diego Health, led by Professor Louise Laurent, vice chair for Translational Research and director of Perinatal Research for the UCSD Department of Obstetrics, Gynecology, and Reproductive Sciences, detected the more contagious B.1.1.7 variant locally, a mutation initially detected in the United Kingdom that accounts for more than 60% of new cases in London. That variant has been detected in several

states, indicating that it is already circulating in this country. Other variants, such as one emerging from South Africa, will continue to occur, each with slightly different mutations. These strains appear to be more easily transmitted, but we do not have evidence that these variants change the course of disease. Even so, the implications are significant. If the more easily transmitted virus becomes widespread, it will lead to more cases and hospitalizations. **The Moderna and Pfizer vaccines are expected to remain effective at preventing serious illness due to the B.1.1.7 mutation.**

What Does the Surge Mean?

ICU capacity in the Southern California and San Joaquin regions remains at 0%, while the Bay Area, Sacramento and far Northern California regions are at 3.5%, 9.2% and 25.4% respectively, as of January 7, [according to CDPH](#).

In Los Angeles County, some ambulances are already waiting hours to transfer patients into overburdened hospitals. Patients with COVID-19 also require significant amounts of oxygen, causing infrastructure problems at smaller hospitals and slowing the discharge of recovering patients due to shortages of portable oxygen tanks. Facilities across Los Angeles County have begun using their surge capacity and - if trends continue - may have no choice but to issue a Crisis Standards of Care (**CSC**) declaration soon. Recognizing this, CDPH issued an All Facilities Letter on December 28 that requires hospitals to post their CSC policies so the public is aware of this possibility. You may recall that UCH convened a systemwide group of critical care specialists and bioethicists in the spring of 2020 to create consistent CSC guidance for UCH hospitals, which can be [viewed here](#).

The goal of CSC is to save the most lives possible using objective clinical criteria based only on the likelihood of a patient surviving the acute phase of illness or injury.

	Save the most lives possible
	Base all actions on justice, consistency & objective clinical criteria
	Treat all patients equally & respectfully, & prevent perpetuation of inequalities



Also in LA County, an advance team from the U.S. Department of Defense arrived at Harbor-UCLA Medical Center last week ahead of the deployment of army medics and nurses to assist with overflow there.

And in Orange County, the county's health care agency constructed three field hospitals, including one large enough to treat 40-50 patients in the parking lot of UCI Medical Center (photo, left).

The field hospital, which opened at the end of December, is already caring for patients who are less severely ill or injured. See a time-lapse video of construction [here](#). We will continue to pursue resources wherever possible.

We are now in a race between the spread of the virus and the pace of vaccinations.

VACCINATIONS UNDERWAY ACROSS UNIVERSITY OF CALIFORNIA HEALTH

On December 15, UCH received the first shipment of the Pfizer vaccine and began immediately immunizing employees. Thus far, more than 42,000 UC health care workers have received the first dose of the Pfizer or Moderna vaccine, and all remaining priority 1A employees are expected to have had the opportunity to do so within the next week. Some of the earliest vaccinated employees have started receiving their second doses.

The vast majority of UC employees who have been offered a vaccination appointment have done so. Vaccines are offered equitably, to include all persons in patient care settings regardless of title or role and are staggered to minimize the possibility of staffing disruptions caused by mild side effects. Figures below are based on data from earlier this week.

Location	UC Davis Health	UC San Diego Health	UCI Health	UCLA Health	UCSF Health	TOTAL
# of First Doses to Date	8,862	8,396	6,639	9,696	8,551	42,144

UCH READY TO HELP ACCELERATE COMMUNITY VACCINATIONS

Media coverage has noted two lags in overall vaccine administration. First, the number of doses shipped to the states has lagged projections and, secondly, only ~30% of doses that have been shipped have been put in arms. In contrast, at UCH we have rapidly administered all vaccine that we have been allocated and UCH is ready to assist the state with its broader inoculation efforts. We look forward to completing first dose vaccination of our health care workers very soon, and the opportunity to expand vaccinations for health care workers who are not UCH employees, other essential workers on our UC campuses, and our UCH patients. Priority segments for California are ultimately prioritized by CDPH, building on input from the Advisory

Vaccinate All 58

Currently: Phase 1A; healthcare workers & long-term care residents

Up next: Phase 1B

Phase 1B Tier One

- 75+
- Workers in education and childcare, emergency services, food & agriculture

Phase 1B Tier Two

- 65+
- Transportation / logistics; industrial, residential, & commercial sheltering facilities / services; critical manufacturing; incarcerated individuals; homeless

Vaccinate All 58

Phase 1C

- Age 50+
- 16-49 with underlying medical conditions and/or disability
- Water & waste management; defense; energy; communication & IT; financial services; chemicals/hazardous materials; government ops / community service

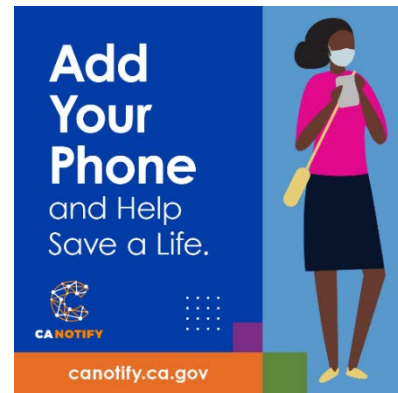
Committee on Immunization Practices (ACIP) within CDC. As of January 7, CDPH has broadly defined priority populations for 1B and 1C, *which are subject to change*.

UCH CONTINUES TO INNOVATE AND LEAD

UCH continues to demonstrate its breadth and depth of capabilities in responding to this public health emergency.

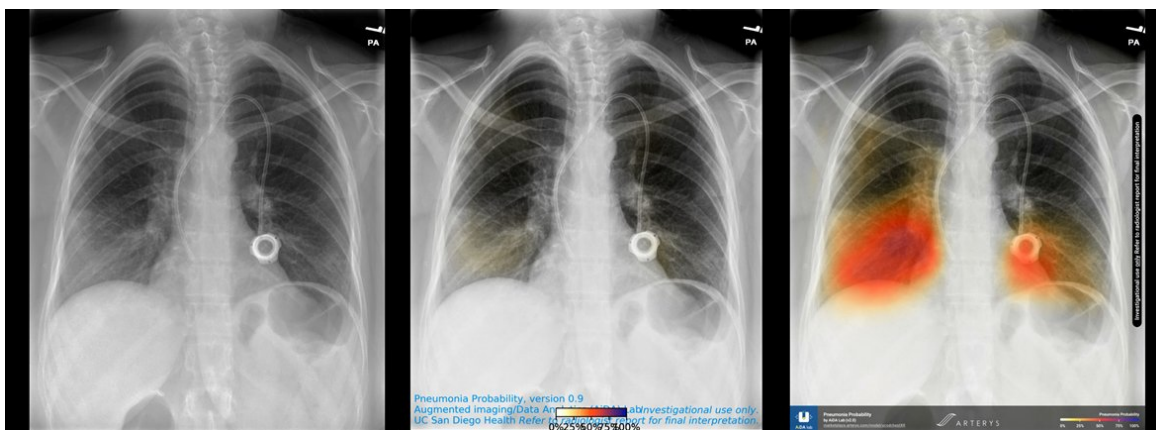
The exposure notification app, [CANOTIFY](#), first piloted by UC campuses in September and rolled out statewide in December, has exceeded 8 million activations. This represents 20% of the state's population and 29-33% of California's smartphone users.

As of January 4, more than **67,856** people using the system have tested positive for COVID and entered validation codes to launch anonymous exposure notification. Exposure is assessed via Bluetooth technology that exchanges an anonymous key with other enabled phones that remain within 6' feet for more than 15 cumulative minutes. When a user tests positive they are issued validation codes by CDPH to voluntarily launch anonymous notification. Recipients of these alerts are encouraged to isolate and seek testing as soon as possible to break the chain of further transmission.



At UC San Diego Health, artificial intelligence (AI) is being used to help screen all lung x-rays for signs of pneumonia - one of the leading causes of death from COVID-19.

Patients with pneumonia usually need hospitalization versus patients whose lungs do not show that degree of inflammation and fluid buildup. The use of AI augments the analysis by done by trained radiologists. As noted by Dr. Albert Hsiao who led the development of this machine learning algorithm, "Pneumonia can be subtle, especially if it's not your average bacterial pneumonia, and if we could identify those patients early, before you can event detect it with a stethoscope, we might be better positioned to treat those at highest risk for severe disease and death." The AI screened 66,731 images in 2020. Use of the algorithm may be expanded because 86% of physician users thought it was reasonably easy to incorporate it into their workflows and some 20% reported that it impacted clinical decision-making. The success was reported in the Nov.5 issue of [Journal of the American College of Emergency Physicians Open](#).



At UCI Health's [Center for Artificial Intelligence in Diagnostic Medicine](#), researchers have created an online tool that predicts the likelihood a patient with COVID-19 will need a ventilator or other ICU resources.

The machine-learning model was developed using UCI Health patient data to create an algorithm that factors in pre-existing conditions such as asthma, hypertension and obesity, hospital test results and demographic data to calculate the likelihood a patient will need

intensive care. The predictions were accurate ~95% of the time. The model was tested at Emory University in Atlanta to see if it performed with a different patient population - it did.

COVID-19 Predictive Analytics Tool

Input Variable	Value	Percentile
Age	65	77
Gender (0=F, 1=M)	1	69
Comorbidities (CVD, CAD, CKD, Asthma/COPD, DM, HTN, Obesity)	3	90
BMI	30	65
Respiratory Rate	25	92
WBC	10	97
Lymphocyte %	10	14
Creatinine	1.1	83
LDH		
Troponin		
Ferritin		
Procalcitonin		
CRP	5	65

Submit

Likelihood of requiring ventilator support or ICU admission **33.9%**

The online COVID Risk tool, shown left, is accessible to all health care organizations at <http://covidrisk.hs.uci.edu/>

These, and many other innovations, continue to demonstrate the value of the academic health enterprise in confronting today's most difficult challenges.

VACCINE CLINICAL TRIALS CONTINUE

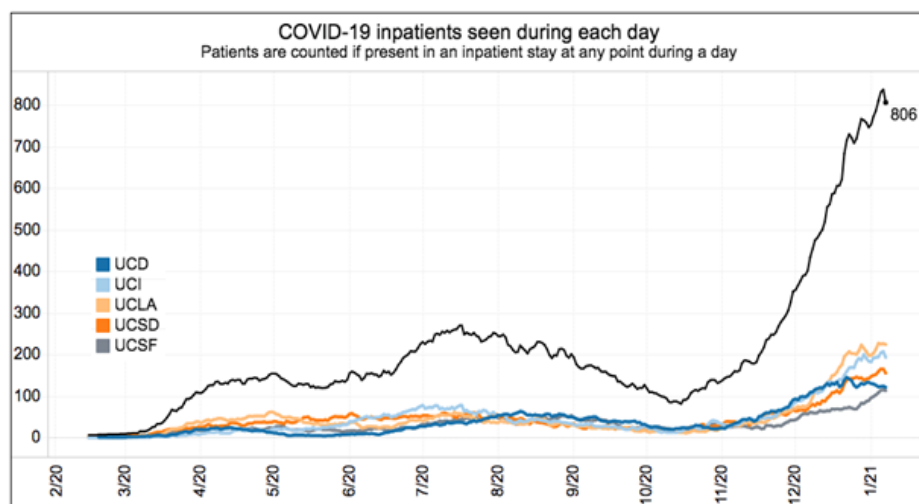
UCH has been involved in all major clinical trials of COVID-19 vaccines conducted in the U.S. This includes the recently approved Pfizer and Moderna vaccines as well as new ones in development.

We are very proud of the UC Davis SOM team, led by Dr. Timothy Albertson, for the clinical trial work on the Pfizer vaccine and their exceptional success enrolling a diverse participant population. With the 225 patients enrolled, 30% are Latinx, 12% African American and 6% Native American. This diversity is much-needed across

clinical trials overall and essential to address vaccine hesitancy among historically marginalized groups. View the [article](#) and [supplement](#) published in the December 31 issue of New England Journal of Medicine. Thank you to the entire UC Davis SOM team who worked tirelessly on this.

Although two vaccines have been approved by the FDA, additional ones remain in various stages of development and are needed in order to ultimately satisfy domestic and international demand. And once again, UCH is playing an important role. UC Davis Health is actively recruiting 200-300 participants for Phase 3 clinical trials for a vaccine candidate from Novavax. Volunteers from Latinx, Black and Native American communities are sought – again – to help ensure any analysis reflects appropriate diversity. Like the vaccines from Pfizer and Moderna, the Novax vaccine candidate requires two doses. One advantage to this vaccine candidate is that it can be stored at normal refrigerator temperatures, simplifying distribution and storage.

INPATIENT COVID-19 CENSUS CONTINUES TO SOAR: NOW AT 806



The rise appears to be partly driven by Thanksgiving gatherings, which is reflected in the number of family units that we are now seeing hospitalized for care.

If gatherings also occurred for the holidays in December and for the New Year, these numbers could rise further.

SOME OF THE HEROES OF THE PANDEMIC



"A lot of people have been asking me about side effects.

And while there are published data for 40,000 people and their side effects, yeah sure, of course I'm happy to overshare. So far all I have is a sore arm – like the soreness after working out, without the work, so enjoy it. There is also this other feeling. I took care of patient zero, the first to get community acquired covid-19.

Since then, there has been a lot of death. And not regular ICU deaths, but really lonely deaths. Over and over. There's no need to tell a specific, devastating story – every health care worker has one. I was and am so tired.

But with the vaccine, there came lightness. I and so many of my colleagues were giddy to get our vaccines. And as others have described, it was this foreign feeling of hope.

And relief. But finally, hope. So side effects? **Arm soreness and hope."**

- Janelle Vu Pugashetti, MD (@jvupu)
M.D Pulmonary & Critical Care Fellow
UC Davis Health (2nd Row Left)



Caption for previous page:

Vaccinations began in mid-December for UCH employees who work in patient care environments. Many posted selfies on social media and expressed a mixture of relief and hope as well as sadness about the lives lost. All UCH employees in Priority Group 1A who wish to be vaccinated will receive their first dose later this month. Some employees began receiving their second dose this week.

IN CLOSING

The darkest hour is just before the dawn.

Many people in our country have experienced great loss over the last months. Health care workers have not been exempted, and we encounter heart-breaking scenes across our facilities and in our communities each day. In hospitals, it is now common to care for multiple members of the same household who are hospitalized simultaneously for treatment of COVID-19. Difficult decisions about allocation of resources from hospital beds to oxygen to vaccines need to be made daily with integrity and respect for equity. These stresses are compounded by fatigue and grief, yet our health care workforce continues to persevere and deliver excellent care.

The pandemic continues to evolve and deliver new challenges. January and February are likely to be the most challenging months to date as cases increase, viral mutants emerge, and millions of people worry about when they will be able to be vaccinated. During these challenging times, we must continue to practice what we know works: avoiding gatherings, practicing physical distancing, wearing masks and face coverings, and following public health guidance.

I remain hopeful that vaccines will turn the tide on this pandemic, and I am realistic about the complexity and magnitude of the undertaking. UCH will continue to lead during the latest surge and the ongoing vaccine roll-out.

The pandemic has illustrated the interrelationships between public health, the economy, and the freedoms within a democracy that create opportunity. I stand in solidarity with health care workers and all those who are supporting our democracy through individual and collective public health actions aimed at ending the pandemic.

With hope,
Carrie L. Byington, MD
Executive Vice President
University of California Health



A new mural in downtown Sacramento – *Essential Heroes* – honors health care workers. The mural is at [12th & G Street](#).

Mural by Madelyne J. Templeton
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