

Update: April 3, 2020

## COVID-19 DIGEST

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### *From the Cross-Campus Infectious Diseases COVID-19 Task Force*

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## EPIDEMIOLOGY

### **LOCAL**

As of today, there are over **11,277 confirmed COVID-19 cases and 250 deaths** in California. In San Francisco, there are **497 confirmed COVID-19 cases and 7 deaths**. Across the UCSF/ZSFG/VA system, 42 patients with COVID-19 are hospitalized (18 in ICU). Testing capability is now available at all three hospitals' microbiology labs with shorter turn-around times and expanded testing. \*Data from [NY Times](#), and [SF DPH](#)

### **NATIONAL**

Cases in the US continue to climb and **now exceed 270,000**, with testing capability still not being adequate countrywide. In the last 24 hours, there were over 77,756 new cases [reported](#). New York State and NYC continue, unfortunately, as the epicenter of the epidemic in the United States: New York State has 92,381 cases and >1,500 deaths, with 57,159 of those cases in New York City. Nearly a quarter of the cases in the U.S. are now in New York City. **We spotlight the situation in Michigan today: They are reporting 12,744 cases and 479 deaths, with Detroit reporting over 2,500 cases and ~100 deaths.** [Detroit](#) became the largest city in the country's history to file for bankruptcy in 2013, but was well on its way to recovery before COVID-19 hit. Now, [Ford Motors and General Motors](#), who had employed thousands of people in Detroit since 2013, have shut down production and laid off thousands of workers.

### **GLOBAL**

Globally, we passed a **million cases** yesterday afternoon with current reporting showing **1,093,103 cases and 58,729 deaths due to COVID-19**. The US (the third most populous country in the world) leads the world in number of cases, followed by Italy, Spain and then Germany. Germany is reporting 91,159 cases and 1,275 deaths.

### **PUBLIC HEALTH ACTION**

Major **public health actions** continue worldwide. The debate has turned to universal masking for the public (see FAQ below). Governor Gavin Newsom has been discussing this for California, but is concerned about preserving personal protective equipment supplies for healthcare workers. Yesterday, Mayor Eric Garcetti of Los Angeles told everyone in the nation's second-largest city to start wearing masks to combat the pandemic. In other public health actions, the 21-day lockdown in India continues with [NO2 emissions falling](#) dramatically as a result in one of the world's most polluted countries. However, millions of Indians, including migrant workers, who depend on each day's wages for their daily meal were thrown out of work. As transport options were shut down, many families in New Delhi and other major cities began to walk home to their distant villages with little access to food. Bangladesh, Sri Lanka and Pakistan—who will face similar economic crises with national lockdowns—have locked down only certain districts in their countries.

### **DAILY UPDATES**

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019>

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## UP TO THE MINUTE DISPATCHES

### UCSF researchers develop a map of viral-human protein interactions to identify potential therapeutic agents, including existing drugs

Most antiviral drug discovery is directed towards developing drugs that directly inhibit or interfere with specific viral proteins. However, viral proteins often interact with specific host proteins, and blocking those interactions or even the host protein function is an innovative avenue for anti-viral drug discovery. The [Krogan](#) and [Shokat](#) labs at UCSF led a multi-institutional scientific collaboration tour-de-force, to apply their newly developed technologies to identify host proteins targeted by the virus causing COVID-19 (SARS-CoV-2). They [reported](#) successful expression of 26/29 predicted SARS-CoV-2 proteins individually in human cells, purified the viral protein in such a way that the interacting human proteins would still be binding to it, and then used mass spectroscopy to identify the interacting human proteins. This analysis predicted SARS-CoV-2 interactions with ~300 human proteins. They further identified 67 druggable human proteins or factors targeted by 69 existing FDA-approved drugs, drugs in clinical trials, and/or pre-clinical compounds. Their work may provide key insights into effective molecular targets for developing broadly acting antiviral therapeutics against SARS-CoV-2 helping to treat COVID-19.

### Hydroxychloroquine for treatment—where are we now?

Hydroxychloroquine (HCQ) has *in vitro* lab activity against the COVID-19 virus (SARS-CoV-2) and may act as both an anti-viral and anti-inflammatory, but data to treat disease are limited. Two small trials in China ([30](#) and [62](#) patients each) randomized patients with generally mild COVID-19 disease to receive 5 days of HCQ vs. no HCQ; all received standard therapy which included a variety of antiviral treatments. There was no difference in viral suppression at day 7 (only available in [one study](#)) and no substantial differences in clinical outcome or safety. There was a trend toward chest CT improvement with HCQ, and four patients progressed to severe disease in the control arm while none did in HCQ arm, but the small size of the studies limits our ability to draw any conclusion about HCQ efficacy. Two French studies reported on the use of HCQ given with azithromycin. Eighty patients with generally mild COVID-19 all received HCQ + azithromycin and most improved clinically. SARS-CoV-2 viral load and detectable live virus declined during treatment. However, these clinical and virologic outcomes may not be different from what is seen in those with [mild disease without treatment](#). In contrast to an [earlier article](#) suggesting that HCQ with or without azithromycin led to more rapid viral clearance, [a single arm study](#) of eleven French patients receiving HCQ + azithromycin reported no evidence of rapid viral clearance or clinical benefit. **The bottom line:** We need larger randomized controlled data to definitively inform us if HCQ impacts viral clearance or clinical course and if any observed benefits outweigh risks. Outside the context of clinical trials, providers considering hydroxychloroquine as part of COVID-19 treatment should weigh the risks and benefits for the individual, evaluate for comorbidities and drug interactions that may affect safety of HCQ administration, and monitor during treatment.

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## FAQ

### 1. Should masks be used by the general public in crowded spaces?

We support face masks or face covering in addition to present guidance on social distancing and hand hygiene for 3 reasons—the highly contagious nature of the virus, asymptomatic transmission and empiric evidence from Asia where masks are routinely used. Supplies of hospital grade masks for health care works must be prioritized, but excess surgical masks or homemade masks of multilayered cotton likely provide more protection compared to nothing during the epidemic. An increasing number of cities in the US are embracing this recommendation as an adjunct measure: *Stay in place, keep your space and cover your face.*

### 2. What are the common comorbidities associated with severe COVID-19 in US?

To date, most studies have examined conditions associated with severe COVID-19 outside the US. Findings in the US are similar to other countries. Among 7,162 cases [reported](#) to the CDC with data on comorbidities and other risk

factors, 37.6% had at least one comorbidity or risk factor for severe disease. The most common included diabetes (10.9%), chronic lung disease (9.2%), and cardiovascular disease (9%). A higher proportion of persons admitted to the ICU had at least one comorbidity or risk factor (78%) versus persons hospitalized but not admitted to the ICU (71%) or not hospitalized (27%). Of 184 fatal cases, 94% were among persons with one or more major comorbidity. These findings are not surprising in light of what is observed with other respiratory viral infections such as influenza, but we have much to learn regarding COVID-19's impact on other patient populations such as persons living with HIV.

**3. In the setting of a shortage of nasopharyngeal flocked swabs, what other swabs can we use for detection of COVID-19 by PCR?**

Swab shortages can limit testing capacity and therefore being able to use alternative swab types is important to maintain our ability to test patients. Recommended approaches when standard small tip size nasopharyngeal (NP) flocked swabs are not available include using a single large tip size flocked swab to first collect from the oropharynx and then from the mid nasal turbinate; or using a single synthetic (non-flocked) swab to collect first from the oropharynx and then from the mid nasal turbinate. Flocked refers to a type of swab that has multi-length fibers at the tip designed to enhance absorption of specimen. Flocked swabs come in both small (designed for NP sampling) and large (designed for oropharyngeal sampling) tip sizes.

**4. Where can patients with recovered COVID-19 donate blood for convalescent sera treatment trials?**

We discussed in the last digest that researchers reported clinical improvement in patients receiving convalescent sera. Whether this approach is truly efficacious requires rigorous study. Recovered patients interested in donating can contact [Vitalant](#) and the [Red Cross](#).

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## EDUCATION

The UCSF Task Force can provide updates by ID faculty on COVID-19 to your department, division or team in varying formats: a 15-minute talk, a Grand Rounds, a Q&A session or another format that might suit your group. *For more information or to schedule a session, please contact Chesa Cox at [Chesa.Cox@ucsf.edu](mailto:Chesa.Cox@ucsf.edu).*

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**UCSF Hospital Epidemiology and Infection Prevention COVID-19 webpage:**

<https://infectioncontrol.ucsfmedicalcenter.org/ucsf-health-covid-19-resources>

**San Francisco DPH link:** <https://www.sfcdcp.org/infectious-diseases-a-to-z/coronavirus-2019-novel-coronavirus/>

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