

## COVID-19 DIGEST

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

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### EPIDEMIOLOGY

*The COVID-19 global epidemic spread is continuing to accelerate. The United States is joining Europe as an epidemic epicenter. New York is at the center of the increases. Last week, the US was #8 globally in number of **confirmed cases**. This week the **US is #3**. It is important to note that interpretation of increases in confirmed COVID-19 cases is highly dependent on testing access; however deaths (less subject to bias in detection) are rapidly increasing – **140 deaths in the US on Monday alone**. Although hundreds of clinical trials for COVID-19 are ongoing, there is **no proven treatment** for this disease to date.*

#### LOCAL

As of today, there are **152 confirmed COVID-19 cases and 0 deaths in San Francisco**.<sup>\*</sup> In many medical centers, the hospital census of persons under investigation (PUI) is far higher than hospitalized cases, in part because of slow testing turnaround in some settings. Disposition of non-critically ill PUI with unstable housing/supportive services also continues to be a challenge, leading to hospitalizations for this group. At present, intensive care needs are being met; and plans across the city are underway to meet possible increased demand as we carefully monitor our local epidemic curve under shelter-in-place conditions.

<sup>\*</sup>from [SF DPH](#)

#### NATIONAL

There are 46,805 confirmed cases in the US; on Monday over 10,000 new cases were reported. New York State (25,000 cases, of these ~15,000 in New York city) is experiencing a rapid surge in confirmed cases and hospitalized patients and now accounts for **5% of all global cases**. New York City's health care system is experiencing challenges in every level of the response including staffing, hospital and ICU beds, and PPE. City leaders are breaking new ground in innovative approaches to increase capacity for care provision including repurposing operating rooms and underutilized buildings.

#### GLOBAL

There are over **407,000 cases** of COVID-19 and **18,200 deaths globally**. The death toll in Italy (~ 6,800 to date) continues to exceed what has been seen in many other regions in terms of case fatality rates, and the health systems are overwhelmed by critically ill patients. For 2 days, new cases and deaths in Italy decreased, but deaths rose to 743 today (Tuesday)—the epidemic is still raging. New reported cases in China remain extremely low.

#### PUBLIC HEALTH ACTION

We are seeing an escalation in public health interventions in most settings and de-escalation in a few Asian countries where the cases have declined. In the US, where cases are rapidly escalating, many states have joined California in shelter-in-place policies. The US has put strict restrictions on border crossing from Canada and Mexico. Increasingly, countries in South America and Africa are ramping up public health strategies, including shelter-in-place, with a goal to mitigate spread in their regions by acting early since COVID-19 came later to these regions. It is estimated that 1.2 billion persons are being asked globally to stay in their homes.

Several Asian countries/regions had rapid responses to COVID-19 including Hong Kong, Singapore and Taiwan. It will be instructive to watch as these regions scale back their public health interventions. Each of these countries has plans or is already implementing loosening restrictions. Hong Kong had previously reported only 150 cases, and on March 2, allowed persons to return to work. They subsequently noted a new spike of 30 cases associated with return of citizens to the island. Maintaining epidemic control is going to require robust contact testing and tracing systems to succeed when

movement restrictions are loosened. The last 2 weeks has seen massive global movement of persons returning to their native countries (including to the US) which can be the source of new epidemic outbreaks.

#### **DAILY UPDATES**

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

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## **COVID TESTING CAPACITY**

Testing capacity for inpatient facilities continues to improve. The turnaround for UCSF Health is ~ 12 hours, for ZSFG is 12-24 hours and for the VA is 24-48 hours.

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## **UP TO THE MINUTE DISPATCHES**

### **What are the data behind the new interest in using hydroxychloroquine and azithromycin for COVID-19 treatment?**

[A very small, non-randomized French study](#) (available as a pre-print) evaluated hydroxychloroquine (HCQ) 200 mg TID for 10 days for treatment of hospitalized COVID patients. The control arm was COVID patients who declined treatment or who were at another medical center. At day 6, the SARS-CoV-2 was undetectable in 70% of those taking HCQ vs 12.5% of those not on HCQ. There was a suggestion that the addition of azithromycin, given at provider's discretion, might increase potency, as HCQ plus azithromycin was associated with 100% viral load undetectable vs 57% with HCQ alone at day 6. However, there are several significant limitations: (1) patients in control group had higher baseline viral loads than those in the HCQ group vs. those in the HCQ/Azithro group, (2) six patients were lost to follow-up in the HCQ arm, including 3 who were transferred to the ICU and one who died and (3) clinical outcomes were not reported. Based on this study, it is not clear if hydroxychloroquine or hydroxychloroquine plus azithromycin reduces viral loads in patients or results in improved clinical outcomes. Randomized controlled data with clinical outcomes are needed. We need to be cautious about the potential side of effects of hydroxychloroquine, including QTc prolongation.

### **In case you missed it, intense tracking of hospital contacts of early case of COVID-19 in the US—the patient's husband but not hospital contacts were infected.**

#### **[Overview of the 1st known person-person transmission in the USA from The Lancet](#)**

The index patient was 60 year-old traveler who visited a sick relative and other family members in Wuhan, developed symptoms in retrospect as early as 1 day after return, was hospitalized with pneumonia and tested positive for COVID-19 seven days after returning to Illinois. Her only close contact (husband with COPD, did not travel), developed symptoms as early as 4 days after her return, became COVID-19 positive 11 days after her return, and was hospitalized 14 days after her return. Extensive contact tracing that included use of video surveillance cameras in the hospital revealed 372 contacts of both patients; 347 underwent active symptom monitoring for 14 days (152 community contacts and 195 HCW contacts; 66% low risk, 34% medium risk or higher). 43 PUI's (fever, cough, and/or SOB within 14 d of exposure; 41% low risk, 59% medium risk or higher) and 32 asymptomatic, exposed HCWs tested negative. COVID-19 transmission occurred only in husband (1/347 monitored contacts), who had prolonged, unprotected exposure. There was no transmission to other contacts. This is a single case, and severity of illness, extent of viral shedding, and timing of exposures may have contributed to the apparent limited transmission. We will continue to share information on risk for HCW as the epidemic unfolds.

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## FAQ

### 1. Do infected persons gain immunity to SARS-CoV-2?

It is not known if infection with SARS-CoV-2 results in long-lasting immunity. However, a recent [study](#) in rhesus monkeys suggests that at least short-term immunity is likely. Researchers infected rhesus monkeys with SARS-CoV-2 and documented clinical disease and viral shedding. Twenty-eight days after primary infection, monkeys were re-exposed to the virus. None of the re-exposed monkeys demonstrated clinical disease nor were found to have viral shedding. However, [studies](#) of common coronaviruses that cause upper respiratory tract infection in humans have been shown to result in only partial, short-term immunity. Whether natural infection with SARS-CoV-2 will result in short term or durable immunity in humans remains unknown and an area for further research.

### 2. Does temperature (climate) effect COVID-19 spread?

SARS-CoV-2 transmissions have occurred predominantly within a temperature range of 3-17 C and a humidity of 4-9 g/m<sup>3</sup>, suggesting SARS-CoV-2 transmission may be less efficient in warmer humid climate ([Bukhari](#)). Similarly, in temperate climates, infections by other coronaviruses has been shown to occur primarily in winter ([Gaunt](#)). While it may be reasonable to expect a decline in contagiousness of SARS-CoV-2 in warmer weather, the degree to which weather will impact transmission is not known and will need further monitoring.

### 3. Why are people talking about ACE/ARB blockers in relation to COVID?

SARS-CoV-2 utilizes the angiotensin-converting enzyme 2 (ACE2) receptor for viral cell entry, the expression of which is increased when taking renin-angiotensin-aldosterone system (RAAS) inhibitors (ACE/ARB blockers that block the ACE1 receptor). The clinical significance of ACE2 modulation in human SARS-CoV-2 infection is unknown. RAAS inhibition has been argued to pose a theoretical increased risk of a higher susceptibility to infection due to increased ACE2 expression ([Kuster](#)). On the other hand, animal models suggest increased ACE2 expression is protective from severe acute lung injury induced by aspiration, sepsis, and SARS-CoV infection ([Imai](#), [Kuba](#)). Currently, there is no data proving a causal relationship between ACE2 activity and human SARS-CoV-2 associated mortality. We do not recommend stopping or starting a RAAS inhibitor because of SARS-CoV-2 infection. There are intervention and observational studies planned to address this association.

### 4. What is the survival rate after intubation (mechanical ventilation)?

In published studies to date, the survival rate after intubation is quite low (0-14%). [Yang et al](#) reported on 52 critically ill patients in Wuhan and found that of 22 intubated patients, only 3 (14%) survived. [Zhou et al](#) reported on the clinical course of 191 patients in Wuhan and found that among 32 intubated patients, only 1 (3%) survived. Similarly, [Wu et al](#) reported on risk factors for ARDS and death in 201 patients from Wuhan; only 6 patients were intubated and none survived. Lastly, a [report](#) on 21 critically ill patients from Evergreen hospital in Washington was published last week (Arentz et al, JAMA March 19). They reported that 15 patients required intubation (71%) and of the 21 patients, 67% have died, 24% remain critically ill, and 10% have discharged from the ICU; they do not specify in the report a specific mortality rate for the intubated group.

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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.sfcddcp.org/infectious-diseases-a-to-z/coronavirus-2019-novel-coronavirus/>