

University of California, San Francisco
BioHub Panel on COVID-19, 10 March 2020

Excerpts summarised by Dr. Swati Kannan

Panellists

Joe DeRisi: UCSF's top infectious disease researcher. Co-president of ChanZuckerberg BioHub (a JV involving UCSF, UC Berkeley & Stanford). Co-inventor of the chip used in the SARS epidemic.

Emily Crawford: COVID task force director. Focused on diagnostics

Cristina Tato: Rapid Response Director. Immunologist.

Patrick Ayescue: Leading outbreak response and surveillance. Epidemiologist.

Chaz Langelier: UCSF Infectious Disease doctor

Below are mostly direct quotes from the panellists. The few things that are not direct quotes are in brackets.

Top takeaways

At this point, we are past containment. Containment is basically futile. Our containment efforts won't reduce the number who get infected in the US. We are moving from containment to care.

Now we're just trying to slow the spread, to help healthcare providers deal with the demand peak. In other words, the goal of containment is to "flatten the curve," to lower the peak of the surge of demand that will hit healthcare providers. And to buy time, in the hope that a drug can be developed.

How many in the community already have the virus? No one knows.

In the US, we are currently where Italy was a week ago. We see nothing to say that it will be substantially different.

40-70% of the US population will be infected over the next 12-18 months. After that, we may start to get herd immunity. Unlike 'flu this is entirely novel to humans, so there is no latent immunity in the global population.

[We used their numbers to work out a guesstimate of deaths, which indicates about 1.5 million Americans may die. The panellists did not disagree with our estimate. This compares to seasonal 'flu's average of 50,000 Americans per year. Assume that 50% of the US population (160 million people) are infected. With a 1% mortality rate, that's 1.6 million Americans who may die over the next 12-18 months.]

The fatality rate is in the range of 10 times that of the 'flu.

These statistics are all based on the assumption that no drug is found effective and made available.

The death rate varies hugely by age. Over the age of 80, the mortality rate could be 10-15%. [See chart by age Signe found online, attached at bottom.]

We don't know whether COVID-19 is seasonal, but if it subsides over the summer, it is likely to roar back in the fall as happened with the 1918 Spanish 'flu.

It's going to get worse before it gets better. And we'll be dealing with this for the next year at least. Our lives are going to look different for the next year.

What should we do now? What are you doing for your family?

It appears that we can be infectious before being symptomatic. We don't know how infectious before we are symptomatic, but we do know that highest level of virus prevalence coincides with symptoms. We currently think folks are infectious 2 days before, through 14 days after the onset of symptoms (T-2 to T+14 onset).

How long does the virus last?

On surfaces, the best guess is 4-20 hours depending on the surface type (maybe a few days) but there is still no consensus on this.

The virus is very susceptible to common anti-bacterial cleaning agents: bleach, hydrogen peroxide, alcohol-based cleaners.

Avoid concerts, movies, and crowded places.

Cancel business and holiday travel.

Do the basic hygiene, e.g. hand washing and avoiding touching your face.

Stockpile your critical prescription medications. Many pharma supply chains run through China. Pharma companies usually hold 2 to 3 months of raw materials, so may run out given the disruption in China's manufacturing.

A pneumonia shot might be helpful and a 'flu shot next fall. They are not preventative of COVID-19, but they reduce your chance of being weakened, which makes COVID-19 more dangerous.

We would tell everyone over 60 to stay at home unless it's critical. The CDC toyed with idea of saying that anyone over 60 should not travel on commercial airlines.

At UCSF, we are moving our "at-risk" parents back from nursing homes, etc. to their own homes. They are in self-isolation at home. The other members of the family are washing hands the moment they come in.

There are three routes of infection:

- Hand to mouth or face
- Aerosol transmission
- The faecal-oral route

What if someone is sick?

If someone gets sick, have them stay home and socially isolate. There is very little you can do at a hospital that you can't do at home. Most cases are mild. But if the patient is old or has lung or cardio-vascular problems, read on.

If someone gets quite sick who is old (70+) or with lung or cardio-vascular problems, take them to the Emergency Department of your hospital.

There is no accepted treatment for COVID-19. The hospital will give supportive care (IV fluids, oxygen) to help the person stay alive while their body fights the disease, to prevent sepsis.

If someone gets sick who is high risk (both old and has lung/cardio-vascular problems), you can try to get them enrolled for "compassionate use" of Remdesivir, a drug that is in clinical trial at San Francisco General and UCSF, and in China. You will need to find a doctor there in order to ask to enrol. Remdesivir is an anti-viral from Gilead that showed effectiveness against MERS in primates and is being tried against COVID-19. If the trials succeed it might be available next winter as production scales up far faster for drugs than for vaccines. [More about this is available online: <https://news.bloomberglaw.com/pharma-and-life-sciences/hundreds-of-corona-patients-allowed-to-try-gileads-ebola-drug>]

Why is the fatality rate much higher for older adults?

- Your immune system declines past the age of 50
- Fatality rate tracks closely with "co-morbidity", i.e. the presence of other conditions that compromise the patient's health, especially respiratory or cardio-vascular illness. These conditions are more common in older adults.
- The risk of pneumonia is higher in older adults.

What about testing to know if someone has COVID-19?

The bottom line is that there is not enough testing capacity to be broadly useful. Here's why:

Currently, there is no other test than a PCR test which can distinguish COVID-19 from the flu or from the other dozen respiratory bugs that are circulating. A Polymerase Chain Reaction (PCR) test can detect COVID-19's RNA. However, they still don't have confidence in the test's specificity, because they don't know the rate of false negatives. The PCR test requires kits with reagents and requires clinical labs to process the kits. While the kits are becoming available, the lab capacity is not growing.

The leading clinical lab firms, Quest and Labcore have the capacity to process 1000 kits per day for the nation. Expanding processing capacity takes time, space, equipment, and certification. It won't happen soon. Novel test methods are on the horizon, but they are not here now and won't be at any scale to be useful for the present danger.

How well is society preparing for the impact?

Local hospitals are adding capacity.

If COVID-19 affected children then we would be seeing mass departures of families from cities, but thankfully now we know that kids are not affected.

School closures are one of the biggest societal impacts. We need to be thoughtful before we close schools, especially elementary schools because of the knock-on effects. If elementary kids are not in school then some hospital staff can't come to work, which decreases hospital capacity at a time of surging demand for hospital services.

Public Health systems are prepared to deal with short-term outbreaks that last for weeks, like an outbreak of meningitis. They do not have the capacity to sustain for outbreaks that last for months. Other solutions will have to be found.

What will we do to handle behaviour changes that can last for months?

- Many employees will need to make accommodations for elderly parents and those with underlying conditions and immune-suppressed.
- Kids home due to school closures

Where can we find reliable news?

The John Hopkins Center for Health Security site:

<http://www.centerforhealthsecurity.org/resources/COVID-19/>, which posts daily updates. The site says you can sign up to receive a daily newsletter on COVID-19 by email. [If the page times out due to high demand, keep trying.]

The New York Times is good on scientific accuracy.