March 31, 2020

Hello,

I wish we could say this pandemic will be over soon, but it will not be. The current situation as of March 31, 2020 at 12:00pm (MST):
- People tested: 964,865
- Confirmed cases: 175,067
- Hospitalized: 22,617
- Deaths: 3,415

**Why is there a lag between social distancing and number of COVID-19 cases?**
The cases and deaths we are seeing this week reflect the transmission of the virus that occurred two weeks ago. What I mean is that any mitigation strategies we implement now will take time to affect the number of cases and deaths. This can be frustrating for people, because the fruits of their social distancing will not be immediate.

This figure below is from a study published in the *The Lancet* by a team of researchers in China. It shows the clinical course of major symptoms and outcomes and duration of viral shedding from illness onset in patients hospitalized with COVID-19:

The median time from illness onset (ie, before admission) to discharge was 22 days (range 18 - 25), whereas the median time to death was 18.5 days (range 15 - 22)…For survivors, the median duration of viral shedding was 20 days (range 17 - 24) from illness onset, but the virus was continuously detectable until death in nonsurvivors.

![Figure shows median duration of symptoms and onset of complications and outcomes. ICU=intensive care unit. SARS-CoV-2=severe acute respiratory syndrome coronavirus 2. ARDS=acute respiratory distress syndrome. COVID-19=coronavirus disease 2019](image-url)
So, why is there a lag between social distancing and number of COVID-19 cases?

1. The median time from illness onset to death is about 19 days, so the deaths we are seeing now are from infections that started over two weeks ago.
2. Symptoms take 2-14 days to appear after exposure, so the cases we are seeing today, could be from exposures that happened two weeks ago.
3. The SARS-CoV-2 virus can survive in the air and on surfaces: “viable virus could be detected up to three hours later in the air, up to four hours on copper, up to 24 hours on cardboard and up to two to three days on plastic and stainless steel.” Read more here.
4. It is easily transmitted person-to-person, anyone within 6 feet of an infected person are considered exposed - people not practicing strict social distancing are putting themselves and others at risk of acquiring COVID-19 infection.

**Bottom line:** Due to a variety factors (incubation, transmissibility, infectivity) it takes time to see the impact of social distancing on COVID-19 cases.

**COVID-19 Data Sources**

Where can you find the most recent data on the number of COVID-19 cases? How many people have been tested for COVID-19? How did the COVID-19 virus spread? What treatments are being explored to treat COVID-19? All these questions and more can be answered by looking at the following websites:

**Johns Hopkins CSSE COVID-19 Map**

[https://www.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6](https://www.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6)

Dashboard of COVID-19 infections, deaths, and recovered cases from around the world. I check this website obsessively. Read the Lancet article that describes the dashboard: [read here.](https://www.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6)

**Genomic sequence of COVID-19**

[https://nextstrain.org/narratives/ncov/sitrep/2020-03-27](https://nextstrain.org/narratives/ncov/sitrep/2020-03-27)

This website has the most complete genomic data on the COVID-17 virus. They use publicly shared genomic data to track the spread of COVID-19. I wish I understood genomics better, because this is the coolest way to track a virus. Within the U.S., transmission patterns are complex: samples collected from opposite sides of the country still show close relationships; Washington state has had at least two independent introductions (the first likely from China, the second likely from Europe), which have led to two separate transmission chains; There is evidence for likely local transmission within several states, most clearly within California.

**Milken Institute COVID-19 Vaccine and Treatment Tracker**

[https://milkeninstitute.org/covid-19-tracker](https://milkeninstitute.org/covid-19-tracker)

The Milken Institute is currently tracking the development of treatments and vaccines for COVID-19 (coronavirus). I attached the current list of vaccines and treatments being studied to this email.

**Our World in Data**

[https://ourworldindata.org/coronavirus](https://ourworldindata.org/coronavirus)

This website has information on the number of deaths and cases; on why we should focus on how quickly those numbers double, not on the numbers themselves; on the prevalence of testing, and why that is important for understanding the disease; and what we can and can’t know about how lethal COVID-19 really is. We’ll also explain where we get our data from and why.
Worldometer - Coronavirus
https://www.worldometers.info/coronavirus/
Worldometer is run by an international team of developers, researchers, and volunteers with the goal of making world statistics available in a thought-provoking and time relevant format to a wide audience around the world.

COVID Tracking Project
https://covidtracking.com/data/
The COVID Tracking Project collects information from 50 US states, the District of Columbia, and 5 other US territories to provide the most comprehensive testing data we can collect for the novel coronavirus, SARS-CoV-2. They attempt to report positive and negative results, pending tests, and total people tested for each state or district currently reporting that data.

Google's COVID-19 Map
https://www.google.com/covid19-map/
It's another Google map, but with COVID-19 data.

Myth Busters
- World Health Organization (WHO): Coronavirus disease (COVID-19) advice for the public: Myth busters
- Centers for Disease Control and Prevention (CDC): Stop the spread of rumors
- Johns Hopkins Medicine: Coronavirus Disease 2019: Myth vs. Fact
- Live Science: 13 Coronavirus Myths Busted by Science

Noteworthy Podcasts
- Life Kit, What to do if you lost work because of coronavirus. Listen here.
- The Daily, Why the U.S. is running out of medical supplies. Listen here.

Good Reads
- Health Affairs, Ensuring COVID-19 Vaccine Affordability: Existing Mechanisms Should Not Be Overlooked Read here.
- Science Translational Medicine, More on Chloroquine/Azithromycin. And On Dr. Raoult. Read here.
- Ellevest, How to Get Help from the New Stimulus Package. Read here.

This newsletter and previous newsletters are available for download on my research website: https://aitiaresearch.com/covid-19-newsletters/

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Remember: Don't Panic