

## Podcast Contributor Show Notes

### COVID-19 Update

**Summary:** In this Hippo Education Short, Infectious Diseases specialist Dr. Devang Patel and our own Dr. Neda Frayha discuss the latest updates on the COVID-19 coronavirus outbreak.

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Basic terminology that is new since we last recorded on January 31 - for Neda's own intro:

Virus is called SARS-CoV-2

The disease is called COVID-19

More and more cases and fatalities in the U.S.

First, let's frame the situation. Give us a 30,000 foot view of where things stand currently & what's changed since we last spoke.

Many changes since we last discussed this. The virus has spread around the world with sustained local transmission in several places such as Italy, Iran, South Korea and now the US.

*Many countries are implementing social distancing strategies and implementing processes to keep separated (quarantines, canceling public events, etc.)*

Let's provide some quick updates on what we know about the virus. Anything new re: method of spread?

Still respiratory droplets but the virus has been found in stool and serum specimens, which raises the question of other forms of transmission

Airborne or not?

What do we know now about the transmissibility of the virus?

The reproductive number ( $R_0$ ) (the expected number of secondary cases produced by a single infected person in a susceptible population) for SARS-CoV-2 is estimated between 2 and 3. [Let's talk about what this means in real people terms. Flu  $R_0$  is 1.3.]

What about the case fatality rate? And how does this compare to influenza?

Right now 2-4% based on Chinese studies - WHO reported rate of 3.4% today but that's among confirmed cases

Higher in Hubei province, lower outside of China - higher rates among men (smokers)

But hard to know the real case fatality rate because total denominator of infected people still unknown; could be much higher, driving fatality rate lower

By comparison:

- Flu: 0.06% (can be higher depending on year, Fauci said it was 0.1%)
- SARS: 10%
- MERS: 34%

In terms of overall how sick patients are getting: data from the largest study so far in China show 80 percent had mild infections, about 15 percent had severe illnesses, and 5 percent were critically ill.

Incubation period?

Still 1-14 days, with median 5-6 -- comparable to what we thought before -- but in some cases the incubation period may have been longer, up to 24 days -- this could have an impact on how we define monitoring and surveillance but for now the CDC is still saying 14 days.

We're also learning new things about local transmission rates.

(Washington - 6 weeks)

Most common symptoms?

Still fever (83-98%), dry cough (46-82%), myalgias or fatigue (11-44%), dyspnea (33%)

Worsening of symptoms noticed in the 2nd week, around days 8-10

Labs/Imaging

Lymphopenia

High CRP

CT - GGO - sensitive but not specific

Is there a "typical" patient?

Median age is in the 50s

Male predominance -- 51% to 59% depending on the study (smoking in China)

Populations at risk?

Elderly; based on a [summary report](#) of 72,000+ cases in China by Wu et al in JAMA:

- Mortality rate is estimated to be  $\approx 8\%$  in patients 70 – 79 years of age
- Mortality rate is estimated to be  $\approx 15\%$  in patients  $\geq 80$  years of age
- 80% of mortality cases in patients  $\geq 60$  years of age

We need to worry about people with chronic disease: cancer, COPD, CV disease, diabetes. *(We don't have to read the following quote - more for reference): "China CDC's analysis of 44,672 patients found that the fatality rate in patients who reported no other health conditions was 0.9%. It was 10.5% for those with cardiovascular disease, 7.3% for those with diabetes, 6.3% for people with chronic respiratory diseases such as COPD, 6.0% for people with hypertension, and 5.6% for those with cancer."*

Good news: children seem to be spared / are doing better than older adults -  $\sim 1\%$  of cases and less sick - Why? Perhaps due to regular exposure to other coronaviruses

Pathophysiology

Binds with high affinity to the angiotensin-converting enzyme 2 (ACE2) receptor in humans. The ACE2 enzyme is expressed in type II alveolar cells in the lungs. (I'm not sure this is something that will interest people, thoughts?)

Updated definition on who counts as a person under investigation (PUI) per the CDC:

Much broader now; it used to be that travel to mainland China was critical to being a PUI. Now that there is community spread, this is no longer the case.

As of March 4 - *again, not to read, just to speak about*: “Clinicians should use their judgment to determine if a patient has signs and symptoms compatible with COVID-19 and whether the patient should be tested.

Decisions on which patients receive testing should be based on the local epidemiology of COVID-19, as well as the clinical course of illness. Most patients with confirmed COVID-19 have developed fever (subjective or confirmed) and/or symptoms of acute respiratory illness (e.g., cough, difficulty breathing). Clinicians are strongly encouraged to test for other causes of respiratory illness, including infections such as influenza.

Epidemiologic factors that may help guide decisions on whether to test include: any persons, including healthcare workers, who have had close contact with a laboratory-confirmed COVID-19 patient within 14 days of symptom onset, or a history of travel from affected geographic areas<sup>5</sup> (see below) within 14 days of symptom onset.”

Geographic areas with sustained transmission:

- China ([Level 3 Travel Health Notice](#))
- Iran ([Level 3 Travel Health Notice](#))
- Italy ([Level 3 Travel Health Notice](#))
- Japan ([Level 2 Travel Health Notice](#))
- South Korea ([Level 3 Travel Health Notice](#))

(Source: CDC website, <https://www.cdc.gov/coronavirus/2019-nCoV/hcp/clinical-criteria.html>)

Let's review what we as clinicians do if we care for a patient who fits these criteria.

Call the appropriate office (Infection Control, e.g.) at your institution and your local health department. They will guide you through the next steps. You'll have to fill out a PUI form, they'll let you know what samples to collect - upper respiratory (NP \*and\* OP swabs according to the CDC) and lower respiratory (if possible) specimens. No longer recommended to get serum or any other kind of specimen.

I really encourage everyone listening to have the phone numbers you need handy before you need them; in a stressful situation, the last thing you want to have to do is figure out who you have to call or wait on hold with the operator. Because now, more labs than just the CDC are doing this testing, right?

Yes. Used to be only the CDC, but now that the CDC's diagnostic test has been authorized by the FDA under an emergency use act, the test can be distributed to requesting laboratories. *[There have been some well publicized issues here in terms of how well the initial tests worked - you can expand on this however you'd like.]*

Your lab should be able to help you through this whole process. And the CDC has a lot of detailed information on their site when it comes to handling & storage of specimens and disinfecting afterwards.

Public statements (from Pence - but we won't say his name) that any clinician can order testing. But not true - there simply aren't enough tests!

We know that we as clinicians need to maintain contact + airborne precautions: gown, gloves, N95 or comparable respirators, eye protection. But there is mask madness going on right now (all the stories). What do we need to know about masks - for patients and for clinicians?

Masks are not useful for us walking around the street and should not be used. There is a shortage of masks and we need to save them for HCW who will need them in caring for patients.

I want to talk for a moment about guidance for front-line HCPs as we see patients who have COVID-19.

- Important because we know that at least 18 Chinese doctors and nurses have died caring for COVID-19 patients, and these HCPs skewed younger and generally healthier than other patients who have died of the virus. (Not all died from the virus itself)
- Also very important because the virus can spread from HCPs to other patients -- one Chinese [study](#) suggested that 41% of 138 cases were presumed to have been health care acquired.
- So the CDC has put out a very detailed table that lays out different levels of risk to HCPs based on different levels of exposure, including the circumstances which would potentially require HCPs to stay home for 14 days.

Let's just contemplate that for a moment. Because the truth is that SO MANY of us go to work when we're not feeling well. But here the CDC is saying we absolutely should not, depending on the circumstance. So if our healthcare organizations want to avoid staffing catastrophes & maintain access to care for their patients, it behooves us all to minimize risks to our clinicians.

Exactly. To that point, there are a few main factors the CDC uses to assess the level of risk to the clinician:

1. Duration of exposure (longer time = higher risk, but they don't define a time limit)
2. Patient wearing a mask or not
3. Provider having PPE or not

We won't go through every scenario in the CDC's table, but I think a few are worth highlighting:

Namely the scenarios in which a HCP would need to be under active monitoring for COVID and be excluded from work for 14 days after their exposure:

- If the patient *\*IS\** wearing a mask and the clinician either has NO PPE on or isn't wearing a respirator or face mask
- If the patient is NOT wearing a mask and the clinician either doesn't have any PPE on, doesn't wear a face mask or respirator, or doesn't have eye protection

There is a lot of information on the CDC site about how health care providers with exposures should be monitoring ourselves on a daily basis for fever and any respiratory symptoms.

Interestingly, there was a recent change where now if HCPs have all the PPE EXCEPT they have a face mask instead of a respirator, it's considered low risk. Also low risk for brief exposures like walking a patient back to an exam room or interacting with them briefly at a triage desk.

(We won't go through the following table at all - more for us to know it's there and refer our listeners to it.)

Epidemiologic risk factors	Exposure category	Recommended Monitoring for COVID-19 ( <i>until 14 days after last potential exposure</i> )	Work Restrictions for Asymptomatic HCP
Prolonged close contact with a COVID-19 patient who was wearing a facemask (i.e., source control)			
HCP PPE: None	Medium	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing a face mask or respirator	Medium	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing eye protection	Low	Self with delegated supervision	None

HCP PPE: Not wearing gown c gloves	Low	Self with delegated supervision	None
HCP PPE: Wearing all recommended PPE (except wearing a facemask instead of respirator)	Low	Self with delegated supervision	None
Prolonged close contact with a COVID-19 patient who was not wearing a facemask (i.e. control)			
HCP PPE: None	High	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing a face mask or respirator	High	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing eye protection	Medium	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing gown c gloves <sup>a,b</sup>	Low	Self with delegated supervision	None



HCP PPE: Wearing all recommended PPE (except wearing a facemask instead of respirator) <b>b</b>	Low	Self with delegated supervision	None
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### Treatment other than supportive care?

Still none. Being studied:

- The antiviral medication lopinavir-ritonavir
- Interferon-1 $\beta$
- The RNA polymerase inhibitor remdesivir
- Chloroquine
- A variety of traditional Chinese medicine products.
- Once available, intravenous hyperimmune globulin from people who have recovered from the illness may be attractive candidates to study
- Encouraged NOT to use steroids unless otherwise indicated - may prolong viral replication time

### Disposition? Does everyone need to be admitted (*no*)? What about home quarantine? (and what does this mean, practically speaking)

There was a review [article](#) by Yee et al in the Journal of the American College of Emergency Physicians that addressed this exact issue. Not everyone needs admission. But the decision to discharge a PUI for home isolation should be made in consultation with the local public health authorities.

Patients who DO go home should be directed to use appropriate hand hygiene, wear a simple facemask when around others, and remain isolated to a single room in the house whenever possible.

So, it's understandable that discharge may be inappropriate for patients who aren't able to adhere to recommendations or self-monitoring, or those with inadequate housing.

### How far are we from having a vaccine?

Dr. Anthony Fauci has said that the first candidates will enter Phase 1 trials by early spring.

People are panicking to different degrees. Is any panic warranted right now? If so, how much? (hoping we can bring a level head and some reasonable-ness to the conversation)

In the end this is a good reminder to the public regarding the importance of good hygiene (washing your hands, covering your cough, staying home if you are sick, getting your vaccines when they are available) and an interesting test of our public health infrastructure to help prepare

for future pandemics. What are the take away points we should be learning and using as we move forward?

(one of my biggest takeaways is for clinicians to exert control where we can -- knowing what numbers we need to call, being aware of what resources we have, feeling empowered to ask for more PPE, developing a clear plan with your immediate clinical colleagues, etc.)