"Much of the fear and panic is hype; Minimum 1-year away from a vaccine; China has been very open and helpful"

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Q: First question - WHO has declared the coronavirus as a global emergency. It seems to have crossed the level of an epidemic. How much worse do you see it getting? Also, how bad is Corona Vs others like SARS, H1N1 etc?
A: Both questions are related. We don't know how bad CoV will be because we don't know how common severe disease is. Right now, it appears that the case fatality rate is low and severe disease is about 20-30% of people. However, the cases are probably heavily underreported.

One reason for that is that CoV's often manifest mildly—as cold-like illness. Usually those people don't go to the hospital. Given the quarantines placed on affected cities in China, there may be many unreported cases that are not seen because they are relatively mild.

For SARS and MERS, serological evidence (antibodies in the blood of recovered patients) suggests that there were more cases than originally counted. That suggests that this novel CoV may be more like those. However, we are only beginning to identify patients with early testing, so the severity of this around the world will depend on how much it continues to spread and how severe those cases are.

Q: Can the coronavirus spread human-to-human without showing any symptoms (during incubation period)?
A: It's thought that asymptomatic transmission is rare in respiratory disease. That's because respiratory illnesses spread more efficiently from symptomatic patients—there is just more virus flying around when someone is coughing, sneezing, etc. But there has never been a respiratory epidemic that was thought to be spread primarily by asymptomatic shedding, so this won't be a major driver of transmission.

Q: Can a person recover from CoV without hospital treatment?
A: Yes, absolutely. The majority of coronavirus infections are relatively mild, like the common cold. If patients don't have severe disease, it's actually better for them to not go to the hospital if they don't need immediate treatment, to avoid infecting others and to limit the strain on limited resources like PPE, testing supplies, etc.
Q: How close are we to a vaccine? It took 20 months for the SARS vaccine and by that time the disease was well under control?
A: We are at minimum a year from a vaccine, and I think that's optimistic. This is why we should really invest a lot more in researching preparedness—i.e. antiviral drugs for coronaviruses, "universal" vaccines, etc. We should still work on a vaccine, but it will be at least a year bordering some astonishing technological breakthrough.

Q: What are the worst-case scenarios? Do you see fatality rates climbing?
A: Worst case scenarios would mean increased disease severity and increased fatalities. This would put a huge strain on resources, particularly in countries/regions with less medical infrastructure.

Q: Do you see the R-nought being raised anytime soon?
A: Yesterday the first peer-reviewed estimate of R_0 was published that placed it at 2.2. But that will almost certainly change as we begin to identify other cases in other parts of the world.

(It will) not necessarily (be raised). And even if it does, that doesn't mean disease will be more severe. The other thing is that for SARS and MERS, there are some patients called "super spreaders". These are rare patients who shed a lot of virus and can infect a lot of people (usually in a hospital), where most people may not infect a single other person. Super spreaders can artificially increase R_0. We don't know if this CoV (nCoV) has super spreaders, but if so, this may increase R_0. Again, the severity of disease is more critical for concern than average transmission.

A lot of attention has been paid to the R_0. What is often left out of these discussions is that R_0 is context dependent: it changes with different regions, different populations, different transmission dynamics. R_0 is an average, so the R_0 in Wuhan may be very different from the R_0 in NYC, or in Beijing, or in Mumbai. In any case, R_0 is a measure of a virus' potential to spread, not a promise of how much it is going to spread. The R_0 of SARS was as high as 5, and there were ~8,000 confirmed cases total. It is dangerous to make decisions based exclusively on R_0. SARS, for example, was hugely consequential for economics, but it didn't end up becoming a massive pandemic.

Q: The China Center for Disease Control and Prevention has said that for every 1.2 men, 1.0 women were affected. Could this be because more men were working in Wuhan or as some have attributed "the protection of X chromosome and sex hormones plays an important part in immunity"?
A: This is one of those statistics that will change every day as new cases are reported. We are seeing thousands of new cases per day, not necessarily because the virus has "mutated" but because tests and facilities are getting up to speed. those numbers may change. We also have seen surprisingly few paediatric cases, but that may be because younger people are less likely to have severe disease (that was also true for SARS and MERS).

Q: The WHO just declared the coronavirus a global health emergency. Do you believe they should have done this sooner, at their conference a week ago? Would it have made any difference?
A: I think the WHO should have done that sooner, and I understand the committee was split on whether to do it. No doubt China is well-equipped to handle this. But my personal opinion is that it might have been better to declare the PHEIC sooner to mobilize resources for other countries with less infrastructure.

Q: So, is this just another virus, and just more hyped by the media?
A: Much of the fear and the panic is hype. That is not to say we should be complacent, but we should be calm and focus on preparing to contain and minimize spread and distribute resources. We should not be freaking out about a pandemic and making fear-based policy decisions that can have severe public health and economic consequences down the road.

Q: Is it a dietary disease as is being reported by some? Wuhan people have been eating wildlife i.e. bats, rats, etc for years. Just wondering why now?
A: It may be transmitted by droplets, meaning that if your hand touches a contaminated droplet and it goes in your mouth, you could contract it orally. However, it is likely not from consuming cooked food. This virus was introduced by a single exposure to an infected animal and it has spread human to human since then. That animal could be its natural reservoir—very likely a bat—or an intermediate host (like with SARS), which could be a domestic animal. Any contact with that animal could have caused the initial spread to humans.
Q: How effective is wearing masks? And what type of masks are best?
A: Masks are good for preventing exposure to droplets (like from coughing or sneezing) but not essential. People in the U.S. have begun hoarding masks and I've heard reports of price gouging on eBay. This is ridiculous and unnecessary in most cases. People can minimize risk by practicing good hand hygiene and avoid touching their mouths/noses/faces. Situations that require a mask are when you are in a crowd (like a crowded subway car) or if you are caring for a sick person. If it makes you feel better, wear a surgical mask, but I just flew yesterday, and I live in NYC and don't wear masks.

Q: How do such diseases finally come under control? Does the virus become less potent over time?
A: These diseases will typically either not spread as widely as believed and eventually the chain of transmission will stop, or eventually enough people will be exposed and develop immunity that nobody will be susceptible anymore. Also, viruses are under constant evolutionary pressure to replicate and spread, so they often become less severe over time. It's easier to spread if they aren't killing their hosts.

Q: Do you feel that China is being more open and helpful? We know that they tried to cover up SARS initially in 2003 but have more responsive and honest regarding this situation. Do you feel there is more they should be doing?
A: As a virologist who spends most of my time in a lab, I really can't speak with authority on this, but by all accounts, China has been very open and helpful. The excellent scientists in Wuhan and Guangzhou have shared their data rapidly and practically in real-time. That's unprecedented and definitely different than the situation in the SARS outbreak. Also, China's capacity for rapid response has improved exponentially since SARS, so they are less reliant on other countries for help with developing technology.

Q: The official twitter handle of the Indian government has said that Unani Medicines are useful in the symptomatic management of Corona Virus infection. Your thoughts?
A: In some cases, they probably can help with the symptoms. Without being able to comment on the specific remedies, I'd say generally drinking teas, herbal compresses, things like that are comforting even if there is no specific antiviral effect. I am not sure if the mechanism is known for many traditional medicines but if they involve hydration and some kind of pain relief/fever reduction, that helps with the symptoms. Regarding homeopathic medicines...many homeopathic medicines have been diluted to the point where they are only water. So, I generally say that homeopathic medicines do not work but I'm always open to considering data suggesting otherwise.