

Notes from our call with Professor of Epidemiology - Dr. Ian Lipkin

We did this call this morning at 11am. As flagged, Dr Lipkin is the next level if you're diving into the nature of the virus itself. Dr. Lipkin was in China earlier this year advising China's CDC and preparing a formal report for the Chinese government. In addition, his Columbia lab is one of the few institutions to get COVID19 samples to attempt to develop tests, better understand transmission, etc.

Quick summary is that, although the Chinese got off to a slow start, the US will not be able to replicate their success at social distancing due to cultural and political factors so we are really hoping for a notable weather impact to help mitigate the impact otherwise the impact is likely much worse than China.

Q: Your background & current involvement in COVID-19?

A: started working with China in 2003 with SARS & been active there since. Then with Saudi Arabia on MERS. And again working with China on COVID-19 in Jan & Feb. Now working here in the US to figure out how we can help with messaging & containment. Run a lab here to focus on diagnostics & discovery. Recently began working on plasma therapy (as opposed to drugs).

Q: let's talk first about your recent involvement with China. Can you talk about your experience advising the folks there & the containment measures?

A: China has the opportunity to be very aggressive with how they address these outbreaks. Things were slow to get out the gate because local authorities were not transparent with national govnt. But first reports began circulating mid-December. First sequences of the virus only released in first week of Jan so people could begin testing. This virus is more transmissible than any other virus I've ever studied. We don't think it's airborne (meaning it's circulating in the air and doesn't settle out rapidly so it can travel over large distances). It is primarily an aerosol (heavier, travels shorter distances – typically 3 feet or less) so with transmission on surfaces, much higher. This virus has capacity to persist on a surfaces for 24-48 hours. In warmer months, should subside. But to say it will disappear in May or June is optimistic.

Control is a vaccine – going to take at least a year, prob closer to 18 months. There are some drugs that people think may be effective (bc work with other coronaviruses). But the most exciting thing I think we have to offer now is plasma from others who have recovered from the infection. Was effective in China. If you give it early enough, you can block progression of a more severe disease. Once the disease is severe, it's not clear that we will have any impact at all in reversing that.

Q: Transmissibility & mortality rates?

A: We know when someone comes in with respiratory complaints, can test and treat. In China, you had people who smoked & had respiratory disease – mortality rate upwards of 10% (some places as high at 17%). Seems to be lower here, but we still don't know the total # of people infected. Wont know for several months. It's not unlikely that a large portion of the world's population will be infected. Some say 30%, some say 70%... All I know is that it's going to be a big number.

Q: Flattening the curve & containment measures and their effectiveness?

A: in China, although there was a period when they weren't aggressive, the approach to containment was extraordinary. One member of your family was allowed to leave every other day for supplies/provision. They wore masks & gloves when they left the house. That's how they flattened the curve. The pain was intense but it was short. We can't get people here to do what they're supposed to do. Was very difficult to get De Blasio and Cuomo to close schools, bars, restaurants, places people congregate. No one has put in a curfew. If you really want to stop this, that is how you do it.

Q: Are these half measures (for instance, 10PM curfew in Hoboken) getting us halfway there?

A: I don't think we're getting halfway there with half measures. Because people are still shaking hands, touching cups in restaurants. Until that stops, we'll continue to see this. People are traveling to people's homes. No one wearing gloves or masks. We are not doing a good job at all of containing this.

Q: do you really need to go to the extreme to contain it?

A: will we flatten the curve somewhat? Yes. But we are not going to achieve that same level of success as China. Unless there's a massive weather impact, which we can't handicap.

Q: Is there a way to assess what the weather impact could be?

A: have to let it play out. Even though we know increasing humidity and temperature has an impact on the virus' ability to spread and people spend more time outdoors. Virus circulates much more readily indoors. Need to discuss minimizing contamination of surfaces. There was a New Yorker article about this – don't touch subway or bus handles. Don't touch doorknobs.

Q: Sounds like you're saying we need to go to policy of staying indoors to contain it?

A: We need to go to a rationing policy where we tell people you can only send 1 delegate out to get food. Other than that, everyone stays indoors. That's what you need to do to stop this. Otherwise, you're not going to have the impact.

Q: if we maintain the current measures, what happens in the US?

A: cases in US will continue to dramatically increase. They may slow down a little bit, but if it's leaky, then you're not achieving your goal. We have a leaky system. The NY Times did a nice job explaining this over the weekend with different interventions, but no one can say how this will really work. All we know is that what was done in Hubei & Singapore was very successful. But their hygiene methods are much better than ours. And people follow the guidelines there (wear masks, etc); we do not in Manhattan. On top of that, we have a huge population who are disenfranchised (homeless) and they then become reservoirs for maintaining the virus. So this virus will be around forever. It's like measles. When you stop vaccinating for it, it will be back again

Q: Any insights on hospitalization rates?

A: we are going to be completely overwhelmed. Real concern that we don't have enough ventilators. NY Pres has 100 ventilators. People are going to have other problems... cardio, stroke, injuries. How will we take care of them all? This challenge will only get worse.

Q: on the seasonal question, can we look at warmer places in southern hemisphere?

A: we can expect the virus is only beginning to spread. If this were the second year, we could say something along those lines. This morning, the first case was reported in Liberia. If this takes off in Africa, the fatalities could be catastrophic. Whenever you get a new epicenter, it can infect the rest of the world.

Q: In China, do you think it's contained?

A: I think this is going to be an annual problem. But they're going to be much better about containing it than we are. In China, people see it as their duty & follow guidance – in US, people see it as an inconvenience. We really don't know how many people are infected in NY right now.

Q: Would you hazard a guess how many are infected in NY? Would you say it's 10k?

A: it's an order of magnitude higher.

Q: mortality rates by age group, health status, etc?

A: For the most part, those with adverse outcomes are older, compromised immune system (chemo, lung disease, heart disease, diabetes, obesity, etc). Many younger people are spared any symptoms whatsoever – they are nonetheless highly infectious

Q: if we did for instance a 15 day stay at home policy – would that be sufficient to bend the curve?

A: I think 2 week isolation is satisfactory. Most people are not infectious after day 9 or 10. You can probably cover 90% of individuals by taking it out to 2 weeks. This would be enough to flatten that curve

Q: testing has been hampered but hopefully improving now. Could you give perspective on where we are today and how the improved capacity will help us get control?

A: the way it helps is it allows you to decide who to isolate. Helps identify who are asymptomatic carriers. Important to do the swabs appropriately. That then allows you to figure out who you need to follow, then go from circle to circle. It's tedious and expensive but the best way to mitigate the risk to the community. Roche has a test now. Most clinical labs can't run more than 100 or 200 samples per day. Takes time and have to make sure you're not cross-contaminating. We are going to have some false negatives; don't think we will have too many false positives (bc need 3 events to test pos). Most of the time with these diseases, people get infected once and that's that.

Q: when you look at the ramp about to occur with testing, is there a way to better control? How often patients get tested or can we create more accurate tests?

A: I think the CDC test is probably going to be the most accurate. There are a lot of labs that are accurate. The question is whether that makes a difference – most people have the virus. If you're using the

test to say a person is out of the woods. There are many companies that want to do testing for surveillance. At some point, that will be possible but that's difficult right now. Most corporations want to screen but too difficult to get that done.

Q: on China, is the potential for resurgence sooner or later? Do we know it's actually contained? Has immunity been created there?

A: I don't think we have herd immunity. You don't have the majority of the population infected & you don't have a vaccine. Maybe next year, but not this year. It's possible to see a resurgence, but the difference is they've got diagnostic infrastructure in place. They're in better shape than we are in that regard – they set up excellent infectious disease surveillance. That failed initially bc there was jockeying amongst the scientists, which is beyond irritating.

Q: why have some countries (like Thailand) not seen what we have seen in China or S Korea in terms of magnitude of infection?

A: 3 possibilities: Warmer climate, Virus not there yet, or Don't know about it / not reporting it

Q: on the virus itself, there have been mixed messages about a mutation in the virus suggesting there were 2 strains (one more infectious than the other)?

A: I don't think there's anything that clarifies that for us. There's no evidence that this virus has evolved in such a way that it's causing more or less disease.

Q: you mentioned the disease sits on cardboard for 24 hrs, plastic longer. What about clothes?

A: don't know. Hasn't been studied or published/reported yet.

Q: Is the analysis done using a vial that contains a significant amount of the virus?

A: yes, not sure how we would do a test that's completely accurate to real world scenarios. Always issues when you do lab tests.

Q: Potential for vaccine. Do you anticipate the vaccine will be different each year? More like flu or H1N1?

A: this is one of the few pieces of good news! Don't think the virus will change such that the vaccine we create this year is out of date next year. Very different than flu. Only one positive strand of virus.

Q: do we have any data on reinfection risk?

A: people talk about the potential. We won't know for sure until we get a year or so out and someone gets infected. But I expect this is very unlikely. You develop antibodies against the virus. More likely to be that someone's infection didn't fully clear.

Q: on the vaccine, you mentioned there were concerns about what they would come up with in China?

A: when you take a virus and try to kill it with formaldehyde, if you don't actually kill the virus, you can cause the infection (happened with polio). So it's very easy to make a vaccine, but to take it through safety trial to show it's effective... there's no fast or easy way to do that. Sometimes you find rare adverse effects but you need to know about those. Takes a long time.

Q: how effective are the plasma treatments?

A: on a national level, we're trying to find a way to get people who recovered to donate plasma. Some people think you can repurpose drugs used for malaria, but need to make a substantial commitment in order to test these.

Q: herd immunity?

A: requires that the vast majority of the population be infected. It's over 90%, sometimes higher. So we are not going to get there for a long time. Unless you're talking about a smaller herd.

Q: you said this could be seasonal – guessing it will come back around every year. Why do you expect that?

A; because it is so aggressive and I don't think we wipe it out entirely until we have a vaccine. So this is going to be with us just like measles is. We have to continuously vaccinate against measles or else we have outbreaks, as we saw this year.

Q: containment – what time length do you think works for social distancing?

A: I think it's a minimum of 6 weeks. But these are political decisions and are not necessarily rooted in science.

Q: you mentioned we won't know the mortality rate for a while?

A: Maybe a little more lethal than flu. But if you take only the people going into hospital with distress, then we have a higher mortality rate. Additionally, sometimes their mortality is due to secondary bacterial infections, and we could mitigate that.