



Healthcare 400 Coronavirus Task Force Executive Summary: U.S. Surge Forecast

March 24, 2020

On Tuesday, March 24, Lincoln Healthcare Leadership hosted a conference call for leadership across the largest U.S. providers – health systems, skilled nursing, home care and hospice, and senior living – to estimate the size and timing of the COVID-19 surge in the U.S., what NYC is experiencing right now at the epicenter, and how much we will exceed our acute care system’s capacity.

Note to Reader: The comments in this Executive Summary are predicated on a review and understanding of [Lincoln Healthcare Leadership’s U.S. Coronavirus Surge Model](#), referred to throughout as “The Lincoln Model.”

■ Overview

David Ellis, Founder & President, Lincoln Healthcare Leadership

David Ellis presented the [Lincoln Healthcare Leadership’s U.S. Coronavirus Surge Model](#), a proprietary forecasting tool for the potential rate of growth of CV19 in the United States.

Accounting for variables in infection rate; suppression factors; hospitalization rate; ICU rate; ventilator capacity; and mortality rate, The Lincoln Model drew out the following guidance:

- CV19 in the U.S. will NOT mitigate in 3-4 weeks, but rather several weeks, over the long term.
- “Flattening out the curve” can only be achieved by reducing spread to a 1.0 infection rate. If attainable, the earliest this could see a flattening out is by end of April.
- The current CV19 impact is on track to be significantly above the typical 40K flu deaths over five months. Some have begun to refer to CV19 as “chronic pneumonia”.
- There will be a big uptick in the need for ventilators. (Ellis cited Dr. Robert Cerfolio of NY-based health system NYU Langone, who stated that average vent use with flu is about 3 days, but with CV19 patients it is up to 14 days.)
- There will be huge regional variability in the spread and impact.



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■ Panel Discussion

James Lawler, MD, University of Nebraska Medical Center

Associate Professor, Department of Internal Medicine (U. Nebraska)
Director, International Programs and Innovation, Global Center for Health Security
Director, Clinical and Biodefense Research, National Strategic Research Institute

Tomas Pueyo, Silicon Valley Entrepreneur & Behavioral Psychologist

Two leading COVID 19 analysts offered their views about COVID 19 infection rates, control measures and long-term outlook.

The consensus among the panel is that The Lincoln Model gives very good directional information. As with most models, it's not about the specific accuracy. It's whether it's oriented in the right direction. And the panel agrees this model is.

Generally, Lawler and Pueyo agree on the severity of the situation, and both maintain the outbreak will "get worse before it gets better." However, there were slight differences of opinion about the need for widespread interventions, as well as the timeline required for a "flattening the curve".

** All citations herein are paraphrased, unless explicitly quoted.*

1. The Outlook

Pueyo: In a best-case scenario, the reality will be in line with The Lincoln Model. In fact, Pueyo thinks the infection spreads from person to person over a two-week period, not one (as The Lincoln Model forecasts) and therefore it may spread slower. However, in a worst-case scenario (which is more in line with [a forecast Pueyo has modeled out](#)) 25 million people will be hospitalized, and the need for ICUs will be 10 to 20 times capacity.

Lawler: The impact of CV19 on the healthcare system will be much more significant than previous epidemics. If we could look back on August 3 (which is the final date on The Lincoln Model forecast) and things have sufficiently stabilized, we would be able to say, "We were successful. We did a great job."

Pueyo: I'm optimistic on the long term, but pessimistic on the short term. It will take a year of control measures before we get back to normal.

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Lawler: The U.S. won't go back to normal community activity until there is a vaccine. There will be therapeutic answers, and the summer heat should help us manage things better. But in the fall – with the return to school – there will likely be more spread (absent of a vaccine).

Pueyo: Treatments will be key to keeping things in check. But a vaccine is definitely the endgame.

2. Outlook Variability

Lawler: There are mitigating circumstances, market by market, that will influence the effect this pandemic has. A given health system's surge capacity, for example, will impact mortality rate. Systems precluded from addressing "other routine care" (ie, non-CV cardiac patients) will see an increase in mortality rates among the non-CV population.

Pueyo: Many factors will influence the predictability of the spread and impact of CV19. Pueyo cited supply availability (ventilators, PPE) and bed capacity. [In his own analysis](#), Pueyo suggests masks will be in shortest supply, along with ventilators. These shortages will have "a material impact on our ability to act and react effectively."

Pueyo: There's a growing belief that temperature and humidity will reduce transmission rates. "That's the going thinking." And transmission rates will be reduced through effective hygiene education.

Lawler: The length of stay in hospitals for CV19 is much longer than flu patients. The average hospital stay (pre-CV19) is typically about 6 days; in the case of CV19 patients, it can be two to three weeks.

Lawler: Epidemiology is local. We are likely to see fairly large variance from locale to locale. (For information on how to interpret the local impact a provider may experience, Lawler cited a prediction tool created by Cornell Professor Dr. Nathaniel Hupert called the "[Cornell Calculator](#)."

3. Intervention

On the one hand, Tomas Pueyo believes the speed and severity of interventions will have the greatest impact on the potential mitigation of the spread of CV19.

Pueyo: Contrary to views that the spread is isolated to peaks in cities like Seattle and New York, Pueyo underscored that "13 U.S. states currently have more cases than China's Hubei Province had when it clamped down." China imposed strict measures on all neighboring provinces. He thinks it's a mistake

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that's not happening in the U.S. "If Tennessee decided not to implement strict measures, we are not going to be able to control things similar to China. That's perhaps the biggest variable of them all."

Note: Pueyo authored an article March 21 advocating for strict intervention called, "[Coronavirus: The Hammer and the Dance.](#)"

On the other hand, Lawler cautions against widespread, indiscriminate intervention.

Lawler: Lawler understands the reluctance to clamp down in areas where we have little spread. His belief is control can be done locally. "Strict interventions have been successful in Wuhan, and lockdowns can and should be done in hot spots like NY and California. But that does not mean we should lock down everywhere. No one does well if we hit full economic depression."

Lawler: Testing can be the key to limiting intervention. If you act early enough, you don't have to close down. Testing will be the key that will allow us to "dance", or highly controlled social distancing (a reference to Pueyo's article).

Pueyo: We have to do more testing. We are operating blind until we do this. In South Korea, they were able to get it down without social distancing. But they had great testing and tracing.

Lawler/Pueyo: The consensus is that intervention takes time to have an effect. They call it "the lag." Once implemented, it takes at least three weeks to bring about any intervention results.

Lawler: In China, the full lockdown took three weeks to see any results. The same was the case in Italy, and NYC is still about a week away from seeing any impact of the early intervention.

Lawler: One ray of optimism Lawler pointed to is traditional Nonpharmaceutical Interventions (NPIs) such as school closings and social distancing which have been shown to have very good results in flu cases. And those are modeled on compliance rates of about 30%. With CV19, we are going to see much higher compliance, and therefore should see more effective results.

■ [Lincoln Healthcare Leadership COVID-19 Business Planning & Crisis Management Resources](#)

To receive an invitation to participate in task force calls, please contact:

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