



Return of COVID

Michael F. O'Connor, MD, FCCM Ricardo E. Verdiner, MD Dorothea S. Rosenberger, MD, PhD Erica Wittwer, MD, PhD

“It’s tough to make predictions, especially about the future.” – Yogi Berra

As this is being written, there is nothing even remotely resembling a consensus among experts about whether COVID-19 will return, or what the second wave of the pandemic will look like.

COVID-19 was the first highly communicable and deadly new viral infection to spread around the world in almost 100 years. At the onset of the first wave, we knew nothing about the virus’ biology or transmission. The expectation in January 2020 was that modern systems to capture and analyze data would allow us to predict the spread and course of the first wave and to identify the actions required to contain its spread. The reality was somewhat different. Similarly, the expectation in January 2020 was that our ability to rapidly sequence the virus’ genome would translate very quickly into effective therapies, or the re-purposing of available therapies to treat the afflicted. Once again, the reality was somewhat different. Several of the therapies that demonstrated great promise in the lab failed in clinical trials (most notably hydroxychloroquine). Further, the first wave of infections in the U.S. has gone on longer than any model predicted, and instead of seeing a fall in cases from the first wave all over the U.S., the summer months have brought record high rates of infection across the southern reaches of the U.S.

Will COVID resurge again in the fall and winter? A large number of experts anticipate that it will. A look back at the 1918 flu, the most recent pandemic, showed the first wave occurring in the spring with second and third waves following in the fall and winter. The U.S. remains in our first wave, perhaps due to efforts at flattening the curve and delaying the spread across the country. Interestingly, the second wave of the 1918 flu was significantly more lethal than the first.

Will we see a similar rate of hospital admission and mortality in the second wave? Experts disagree about this. Some think that much of the population who might get sick and die from a COVID-19 infection did so during the first wave, and the number of highly vulnerable people is likely much lower now. Others believe our better understanding of how to protect our most vulnerable populations will shield them from a repeat of our experience during the first wave.



Is the virus becoming less lethal? While many experts are delighted that the hospitalization rates and death rates have declined substantially from June until now, most attribute this to a dramatic shift in the demographic of the infected, the majority of whom are now younger than 45 years old. The wisest course of action is to continue to take all reasonable measures to prevent yourself from becoming infected.

Is there anything about this infection that has not gotten as much attention as it might deserve in the press? While many minimally symptomatic patients have a very good recovery, many young and seemingly otherwise healthy patients do become quite ill from the virus. Of more concern is that many of them have not yet completely recovered their stamina, even months after recovering from their acute infection. The most recent data point to the fibrotic changes that can occur in the pulmonary vasculature with COVID-19 as a possible cause of the delayed recovery.

Can people be reinfected with this virus? There are a growing number of case reports of patients who have been reinfected with COVID-19. As a new infection, we have very little understanding of the immunologic profile required to have lasting or durable immunity from this virus. *There is basic science literature that suggests that it may not be possible for humans to easily acquire durable immunity to a coronavirus infection, and that humans can*

be reinfected by the same coronavirus every year. Those who have recovered from an acute infection should still take precautions to prevent a reinfection.

Will a vaccine be available? The biological considerations mentioned above are the cause of some consternation about the potential of a vaccine for COVID-19. Several manufacturers are already making plans to scale up production in case their vaccines demonstrate effectiveness. Even if vaccines to COVID-19 do not produce durable immunity, cohort and ring vaccination strategies could be used to reduce the spread and incidence of infection.

Will testing be more readily available? While U.S. testing capability has expanded dramatically, so has demand for testing. In spite of dramatic increases in production capability, the manufacturers of commercial testing kits are struggling to keep up with the demand for tests. If there is a second surge, the testing situation will be better than it was in early February, but not nearly as good as anyone would like. If influenza A returns at the same time as COVID-19, it may also drive a shortage of testing supplies for other respiratory infections, the presence of which might help exclude a COVID-19 infection.

Are there any effective treatments? Remdesivir for early infection, dexamethasone for severe cases that require hospital admission, oxygen administration, or critical care. There are thousands of studies



Michael F. O'Connor, MD, FCCM

Committee on Critical Care Medicine, and Professor, Department of Anesthesia and Critical Care, University of Chicago.



Ricardo E. Verdiner, MD

Committees on Critical Care Medicine, and Senior Associate Consultant, Mayo Clinic Arizona, Phoenix.



Dorothea S. Rosenberger, MD, PhD

Committee on Critical Care Medicine, and Professor of Anesthesiology and Critical Care Medicine, Department of Anesthesiology, University of Utah School of Medicine, Salt Lake City. She is also Diplomate, European Society of Anaesthesiology and Intensive Care.



Erica Wittwer, MD, PhD

Committee on Critical Care Medicine, Assistant Professor, and Medical Director for the Cardiac Surgical ICU, Department of Anesthesiology and Perioperative Medicine, Mayo Clinic, Rochester, Minnesota.

evaluating the use of existing drugs as therapies, including everything from amiodarone to famotidine. It is likely that cell therapy, antifibrotic therapy, and antibody therapies will be trialed in a second surge.

Will COVID return? This is difficult to answer when it has not yet gone away, but it appears likely and we would be wise to anticipate, prepare, and plan for additional waves. The scientific community will continue to work at an unprecedented pace to find a vaccine and potential therapies, but in the meantime we must provide the best basic critical care to current patients as well as encourage society to embrace the available measures to prevent the spread as much as possible.

What we know is how effective simple preventive measures are to avoid the spread: wearing masks, physical distancing, washing hands, and working together as a community. As a medical community, we are public servants. As anesthesiologists and critical care physicians, we work across disciplines in the medical field, and we have an obligation to share our expertise, support our public health officials, and live up to our Hippocratic Oath: “In whatsoever houses I enter, I enter to help the sick.” ■