STANDARD DEVIATIONS: Hindsight is 2020

Greetings,

There is only one story form 2020 that anyone will remember, and everyone will remember it differently. Standard Deviations devoted much of the year's content to COVID-19 and I've taken excerpts from each month to revisit the way it unfolded for me and how I related it to you.

January 13, 2020: Believe it or not, awareness of the outbreak was on our radar pretty early.

As news and our understanding of the new pathogen in Wuhan City develop, we'll get a better idea of where we are in preparedness for this outbreak. Soon the things we learn will be seen in the lab as new tests, and perhaps closer to your location than you'd like. Location, location, location. Where will the next pandemic occur? Will it be a disease that reaches every corner of the world, killing untold millions? Will it occur at a place in history that finds us vulnerable? And will our science be positioned to respond?

February 10, 2020: Early on, the reality of a novel coronavirus as a global pandemic was emerging.

The outbreak of 2019-nCoV is underway. It's been declared a Public Health Emergency of International Concern (PHEIC). Tens of thousands have been confirmed to have virus and who-knows-how-many are transmitting it. NCIP is the condition we will be treating and monitoring with our labs, and several cases will originate right under our masked noses. The patients will present with, or develop, abnormal CT scans of their lungs. Their CBC's will show elevated WBCs but lymphopenias. Expect to be seeing blood gases and abnormal chemistries and coags. Microbiology will see blood cultures, swabs, and sputum from floors, and patients, and staff that shouldn't have infections. Patients will crump and need invasive respiratory therapies, even ECMO. Some will die.

March 16, 2020: The CDC quickly produced a PCR assay for SARS-CoV2. It was a disaster. As of today, 12/28/20, nearly 250 MILLION tests have been performed in the US alone.

Testing is going fairly well.

"Whatever it is, it's very, very little."

April 27, 2020: Remember hydroxychloroquine? Utah spent $800K on it without any evidence that the drug would help.

Recently, hydroxychloroquine has been promoted as a treatment for COVID-19. There is not any valid study data to support its use, at this time.

May 25, 2020: Death from COVID-19 becomes evident. In June, 13 veteran residents of the William Christopherson Veteran's Home (including Mr. Christopherson) died in a Utah long-term care facility outbreak.

The real Memorial Day is a reminder of risk and hazards with communicable disease. This year, 2020, may prove to be a landmark year for re-discovering the importance of quarantine, pathogen awareness, and biosafety. COVID-19 outbreaks in prisons and sites where populations are confined in close quarters (nursing homes, cruise ships, processing plants) illustrate the risk and hazard of transmission, just as seen in Charleston, S.C. in 1865, during the Civil War. When will we recognize the risk and learn the lessons of infectious disease?

June 15, 2020: As case counts begin to climb, SD looked at infection among health care workers.

*On **April 15,** 2020, the CDC issued an initial finding about HCW infections and deaths: over 9000 HCW had acquired COVID-19 and 27 had died.*

*Yesterday**, June 14, 2020, 60 days later,** the statistics are updated**: 77,186 cases and 412 deaths.***

{Today, December 28, 2020, the CDC reports 322,828 cases and 1,121 HCW deaths.}

July 13, 2020: Readers know that SD has always promoted biosafety awareness. The pandemic provided many opportunities to push this message in 2020.

Staying safe in the workplace is certainly a big part of what we do in the lab. For decades, the lab has understood that pathogens are clever, sneaky, and ubiquitous. SARS CoV2 is no exception; it may test our understanding of biosafety and the paradigms we've trusted up until this pandemic.

The end may not be near.

August 31, 2020: Over the year, I tried to include helpful clinical findings that relate to our profession. Eosinopenia is one of the interesting findings.

The importance of the eosinophil in COVID-19 disease is not yet understood. These cells are important to inflammatory response and hyper inflammation is a significant morbidity factor in COVID-19. The lungs are a critical organ target of viral progression and EOS are prominent in lung tissue morphology.

September 14, 2020: All doom and gloom? This article about *Wolbachia* tried to highlight a bright spot.

Maybe it's time for some good news. Efforts to control the Aedes aegypti mosquito are showing promising results in reducing dengue viral disease. Data just being published are astounding the arbovirus world with news of reductions in dengue cases that approach 80% where Wolbachia bacteria-carrying mosquitos have been introduced.

October 5, 2020: While COVID-19 is a novel disease, our work has seen risk before.

HIV taught us to wear gloves. TB taught us to wear respiratory protection. Ebola taught us to use PPE, isolation, contact tracing, vaccination, and our noodles. We're back in class and SARS-CoV2 is at the lectern.

November 16, 2020: Guidance from experts and the government were often conflicting; this confused the response.

Misguided perceptions about the nature, origin, risk, infectivity, pathogenicity, treatments, transmissibility, and consequence of the SARS-CoV2 virus have led to unprecedented disease and death around the globe. That's just reality.

December 7, 2020: The downstream consequences of this pandemic will be felt around the world for a long time.

The arrival of COVID-19 will challenge the response effort moving forward. Pandemic disruption of antimalarial treatment and prevention is predicted to result in tens of thousands of additional deaths. The emergence of COVID-19 and its subsequent pandemic spread means that much of the progress against malaria is under enormous risk, with the potential to wipe out 20 years of malaria gains.

Okay, 2020 is on the way out. Will 2021 be better? Let's hope so, but no matter what the New Year brings, Standard Deviations will continue to focus on our laboratory profession and the safety of lab staff.

Have a great week and be safe,

Bryan