PANDEMIC ANGST

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August 24, 2020, Seattle

There was a time back in December when we'd never heard of a coronavirus. We crowded into our living rooms to sing, dance, clink our glasses together, say goodbye to 2019, and welcome in the new decade. We made travel plans for the new year. Hugs and handshakes were not a health hazard, and walking past someone in a crowded grocery store was not a scary thing. Now everything has changed!

Does anyone remember when all this started? It must have been over six months ago. In January we sort of knew that there was a new virus outbreak in Wuhan, China. We didn't know if it was just animal-to-person or person-to-person. But that was China. There are often new virus outbreaks there, but did that portend its spread outside of China? Interesting, but not enough at that time to get much attention here in Washington State, or elsewhere for that matter.

Then on January 21, the first case was confirmed here in King County, in a man who had returned here from Wuhan, China, on January 15. Still, it was not clear if the virus could transmit person-to-person. On February 29, Seattle and King County confirmed the first coronavirus-related death in Washington, also the first in the United States. Dozens of residents reported symptoms at Life Care Center, a nursing home in Kirkland. By then it was pretty clear that it was spreading person-to-person. That caught everyone's attention. A pandemic had begun, here.

In early March, I was promoting folk music concerts for the Pacific Northwest Folklore Society at Couth Buzzard Books. The next concert was scheduled for April 10 with blues guitarist Steve James. I was uneasy about hosting that concert myself and thought about getting someone else. It soon was apparent that the concert might be canceled – forty or more people in the Couth didn't seem like a healthy situation.

By March 10, the new statewide coronavirus case number reached at least 269. In King County, two new deaths and 74 new cases were reported. We were the nation's hot spot for the new COVID-19 pandemic.

On March 11, the World Health Organization declared the coronavirus outbreak a pandemic. Governor Inslee banned gatherings of more than 250 people in King, Pierce, and Snohomish counties. By March 12, he announced that all schools in those counties would close through April 24. By then it was certain that our April concert would be canceled. The next concert after that was Claudia Schmidt on June 7. I still held out some hope for that concert – the conditions might improve by then – but I soon canceled that event.

On March 23 Inslee issued a state-wide "stay-at-home" order as the number of cases continued to rise. That, and orders for mask-wearing, social distancing, and closing of many stores, gyms, and other non-essential businesses, began to have an effect. By early April the number of new cases seemed to be leveling off – the so-called "flattening of the curve." Political and economic pressure then led to an easing of the very restrictions that had led to the leveling. Surprise! With certain restrictions removed, the number of cases began to rise again. What would you expect? Now we are in the same upswing as before, going even higher – a second spike. We need to reinstate restrictions to bring the number of cases down to a very low level before we can ease off.

Are we going to limp along with high infection rates until a new vaccine is ready by early 2021, or possibly later? In a NY Times Op-Ed of August 7, Michael Osterholm and Neel Kashkari declared, "In just weeks we could almost stop the viral fire that has swept across this country over the past six months and continues to rage out of control. It will require sacrifice but save many thousands of lives." Yes, if everyone agrees to a more restrictive lockdown, with masks and social distancing, we could bring the spread of new virus infections down to less than one new case per 100,000 people per day. Right now we are more than ten times that number. We could easily maintain that low rate of infection with testing and contact tracing. Right now we can't possibly do enough testing to bring the numbers down. It's like Whack-A-Mole – whack one mole down and ten more reappear! That's an ambitious goal. But it could be done, and we could live more normal lives. Other countries have now achieved that state of near-normalcy.

The alternative is to wait for an effective vaccine. Even if one were available by early 2021, a very optimistic prediction, it would take many months or more to produce and distribute enough to achieve "herd immunity." What are the problems? Scientists have devised many ways to protect against infections. Vaccines have normally taken years to develop and ensure effectiveness and safety. In mid-July, the WHO counted 23 COVID-19 vaccine programs in clinical testing and another 140 in pre-clinical development. Which ones will actually work, and how effective and long-lasting will they be? A mediocre vaccine may be better than none, but we need something better. Which, of all those under study, will be the one?

The most traditional way to make a vaccine is to use the virus itself and allow the immune cells to recognize it without having to suffer through the disease. A live virus can be attenuated by taking all the chutzpah out of it. Or it can be killed with chemicals or heat, making it unable to replicate or infect. The most popular way today is to take the most important part of the virus, the spike protein – responsible for docking to a cell – in the case of COVID-19, and instruct our immune cells to recognize and destroy it.

Using today's genetic engineering and knowing the genetic code of the spike protein, we can clone its DNA into other cells. These cells can then be used to

crank out a large amount of the protein. This is called a *subunit protein vaccine*. A new approach – called a *viral vector vaccine* – is to use a harmless virus to carry a gene for the spike protein – in the form of DNA or mRNA – into our cells, which will then make their own spike protein. A variation of this is to use just a key fragment of the spike protein, which will sit on top of the receptor on our cells – ACE_2 – that the COVID-19 virus uses to inject itself into our cells. In this way, it would prevent the virus from infecting. This has never been successful; used before, and will involve careful engineering of the spike protein fragment so that it actually works.

With over one hundred potential vaccines now under study, surely one, or perhaps more, will work. But which? And which one will be the best? That's a gambler's choice. A potential vaccine will have to pass three stringent tests: *phase 1* – animal studies; *phase 2* – limited studies in humans to determine antibody production and to rule out any major side effects; and *phase 3* – large scale randomized double-blind tests with thousands or more subjects susceptible to infection. This is the only way we can judge the true efficacy of the vaccine in preventing infection, and any minor side effects. But that takes much longer than the previous tests.

It is highly likely that COVID-19 will be with us for a long time – it will never be completely eradicated. This is true of other viruses such as measles. This will require repeated immunizations. It is something we will have to live with.

In the meantime, we need to be in this game for the long haul – there is no shortcut. That is a daunting thought and the angst of this pandemic. The sooner we all buckle down in this fight, the sooner we can get back to a near-normal life.

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