# Before the Flood

Seattle Front Line Infection Prevention, Public Health and Clinical Healthcare Teams

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A ripple led to a wave, and the wave a tsunami which ultimately landed, somewhat quietly, on our shores in Washington State.

We didn't know then that cases introduced from outside the US would lead to silent transmission and spread of SARS-CoV-2 into our communities — out of sight and out of our control. We should have been mobilizing as a nation, but were lulled by quarantines and travel restrictions, as policy makers called the virus a hoax, and to articles falsely claiming that the virus was an escaped bioterrorism agent. Americans were more worried about politics than we were about biology. Like any virus, SARS-CoV-2 is engineered by nature, not in a laboratory, to spread easily and undetected — a particle so small, and yet able to bring a nation to its knees.

In Seattle, our colleagues at University of Washington (UW), UW Medicine, Fred Hutchinson Cancer Research Center (Fred Hutch), Seattle Cancer Care Alliance, Seattle Children's and the Brotman-Baty Institute were not unprepared. A large surveillance study (the Seattle Flu Study), previously organized to track influenza and other respiratory viruses in the community, rapidly implemented SARS-CoV-2 testing to detect early cases: this ultimately identified genetic evidence of community transmission in Washington State. Statisticians and modelers had warned of worldwide spread and voiced ominous predictions. In preparation, our virology lab had been working diligently since January to develop an assay to detect the virus. We considered the global situation on our healthcare systems, we prepared for catastrophe, and administrators heeded our warnings.

Despite all we knew and prepared for, unforeseen weaknesses in our nation's preparedness hamstrung our responsiveness. Regulatory frameworks delayed community access to testing. Weak supply chain issues limited our ability to procure additional sanitation supplies and personal protective equipment. Global supplies were sapped by early outbreaks and disruption of production outside the US. Most importantly, restrictive testing criteria and limited capacity crippled our ability to detect and follow local

cases and epidemiologic patterns. These challenges gave the virus a chance to establish a beachhead. In fact when astute clinicians[1] and our surveillance systems detected the first community-acquired cases, genomic analysis and predictions from Fred Hutch scientists told us we were already behind the epidemic curve.

SARS-CoV-2 began spreading during respiratory virus season, when mild cases were not recognized. Many with the illness likely worked in our communities, because working when sick is tacitly expected in our culture. It is unclear how much asymptomatic shedding played a role in spread, but without awareness of local transmission, we couldn't encourage important steps such as staying home when sick, telework and social distancing. Furthermore, many employees lack paid sick leave or work multiple jobs; from custodians to baristas, many couldn't work from their couches and still get paid.[2] This says nothing of those needing child or elder care for their families. Still, our science experts and savvy community providers gave us a chance.

We have learned from our colleagues in China, Iran, Italy, South Korea and elsewhere that older adults and those with chronic illnesses are most vulnerable. Among these groups, many who get infected will become ill, and many will die. We have also learned about the inherent limitations of any healthcare system — even sophisticated, well-resourced ones — to manage an influx of acutely ill patients. Our systems are not equipped to withstand a flood.

Nonetheless, our hospitals have learned much in the early days of the COVID-19 pandemic. We worked through challenges in screening, triage, and personal protective equipment availability. We moved quickly from airborne precautions to droplet and contact precautions, recommended by WHO[3] and Canada[4] among others, to reserve N-95 respirators and personal air-purifying respirator hoods for critically ill patients and those requiring high-risk aerosol generating procedures. Incident command

centers at our institutions helped us to streamline communication and address emergent problems quickly.

There are also logistical challenges. Guideline shifts led to confusion in the early days, resupply timelines and strategies for testing were unclear, and messaging to employees wasn't always synchronized between institutions. Version control for documents was nearly impossible as guidelines, both external and internal, morphed hourly. Critical supplies were depleted and some even disappeared from the shelves; other hospitals have seen similar issues. Moving to remote work was logistically challenging in the clinical arena. Public health infrastructures stretched thin by underfunding had to address multiple new clusters of transmission, including a nursing home at the epicenter of the local outbreak. Within days, all of us realized that the work ahead would be daunting.

Yet we have persisted and have found creative solutions. Colleagues have developed drive-through employee and patient testing stations, emergency room assessment tools, structures and systems for community clinic screening, and guidelines for testing low- and high-risk patients in our hospitals. We have efficiently discussed emerging issues and problems as a group, working to limit visitors and teams entering patient rooms, and sharing stocks of critical supplies. We have been nimble, moving quickly from ideas to application and practice. Volunteer workforces and non-clinical staff have stepped up to support areas with critical needs. Education for hospital staff, communities and the media, has been part of the effort to limit transmission chains, including keeping individuals with mild symptoms at home and out of emergency rooms and clinics. Many of us are following best practices by meeting virtually to share and disseminate knowledge across our institutions. Collaborative research ideas and protocols are abundant. Importantly, the city and its leaders listened to experts and we moved to change how we live our lives.

But we also need to speak of Seattle in this time of coronavirus, a take on the brilliant Gabriel Garcia Marquez's seminal book of magical realism, because we have so much to appreciate. Our healthcare community, and our commitment to public health, are strong at their core. We have been awed by the sheer tenacity and grit of our frontline nursing and medical staff, who have been at our patients' bedsides, and staffed our clinics and vital sign stations, and by our elders in long-term care facilities that have borne the brunt of this outbreak. Research teams have volunteered to screen patients. Colleagues have gone into households and nursing homes, areas of ongoing transmission, to help address problems directly. We have rolled up our sleeves, washed our hands, and confronted this virus head-on. Seattle embraced this spirit and followed suit, staying home, donating PPE and send food and support to frontline healthcare workers. We need not just our community but all communities to be more vigilant.

In a spirit of altruism, mixed with science, our centers have come together. We have always loved Seattle and our medical community, but the crucible of COVID-19 has strengthened our comradery and belief in our colleagues and extended our love of the work we do and the people we serve. Despite our efforts, we will see additional patients succumb to this disease. We expect that some of us will develop COVID-19, and others will be admitted to the very hospitals we support. Tragically, many will eventually mourn a neighbor, a friend, a family member or one of our own, as we have already.[5] These facts also strengthen our resolve. Reports from China and Italy are sobering, leaving us to ponder worst case scenarios for what is coming. What we see in New York wounds us all.

Seattle may have been the early testing ground for the US, but the situation becomes more dire daily, as New York, New Orleans and Detroit, battle major outbreaks. Other communities are just identifying their first cases like we were nearly a month ago. We hope that all of you can learn from what we do and have done here. Our healthcare community is committed to sharing our successes and failures.

Through this site, you can access our protocols and guidelines: take them, adapt them and improve them. Fellow healthcare workers, please reach out to us and we will do our best to respond. Journalists and social media experts help us to continue to tell our patient's stories and messages aimed at prevention and safety, not divisiveness or blame. Please continue to raise the "Fauci" alarm to stay at home. It is our duty as a country to learn from this experience and to invest in public health, research, vaccines and a healthcare infrastructure more able to withstand the next pandemic, and more geared to protect those who can least afford to access care.

We have witnessed profound compassion from our fellow healthcare workers, and we stand shoulder to shoulder with those in New York, Louisiana, Michigan, and all other 50 states. We stand beside our colleagues in China, France, England, Iran, Italy, South Korea, and throughout the world, as we try to curtail the coming flood. This novel coronavirus has razed barriers and strengthened bonds within our international medical communities. We write this now, before we are swept away by the coming waves of patients who need us to stand strong for our community. Expect us to go silent as we move from planning to doing, caring, and fighting; from mitigation to triage. We are as ready as we can be, undeterred even as the water level rises. Some still feel it is time to let up the restrictions. We believe now more than ever that we must remain resolute as a nation.

Dedication to protect those most vulnerable is our mission as healthcare workers and one we proudly take on together. We need your support for this challenge, because America is always brighter when not just great — but also united.

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