

Why are we solely reliant on the Public Health model to respond to the COVID-19 pandemic?

Years ago, according to an oft told story, British aerospace was testing the strength of their cockpit windshields with a chicken shot from a NASA designed gun used to simulate the force of a large bird hitting an airplane. Supposedly, the British windshields continually failed the chicken test. The frustrated Brits then asked the Americans for advice. The response, according to legend, was to thaw the chicken before using it to strike the airplane. Sometimes, answers to our most vexing problems are practically right under our noses, hidden in plain sight.

In a pandemic which has plagued our world like no other in over a century, our response has been to exclusively follow the Public Health Model. The model's approach, lead chiefly by the CDC and WHO, was to issue guidance that would "flatten the curve" to avoid overwhelming the medical community's ability to treat those with serious infections until a vaccine or effective therapeutics could be developed. In the U.S., the transformation from guidelines to practical control measures fell mostly to State and County public health agencies.

States developed tiers of responses based on the severity of infection in the community. The most severe tier was to shut down non-essential activities and schools and included hand washing, social distancing and face covering. Over a period of months (too many), the infection metrics improved and restrictions have eased although some sectors of the economy remain closed indefinitely while others are so occupancy restricted that their long term viability is in question.

No rational person would disagree that these measures (hand washing, social distancing and face covering) decrease the spread of airborne viruses. They do, however, share a common weakness – their effectiveness depends on behavior modification. Not everyone is willing to avoid close contact or wear a mask and the will by authorities to uniformly enforce is lacking. We are now seeing other counties that were very successful in flattening their first curve having alarming increases in infections because people stopped complying with behavior modification.

Is the Public Health Model the only response to the COVID-19 pandemic we can mount? The way it has been applied is a one size fits all approach that comes with the enormous cost of shuttering the economy. Add to that the harder to define costs of despair including increased poverty, homelessness, substance abuse, suicides, domestic abuse and a learning stunted generation of school aged children. And don't forget the effects of inequality – how is it fair that the hardest working and lowest paid (essential) workers risk infection while those with the skills and a broadband connection can work from home?

Consider that in the United States, the country with the greatest financial and technical resources in the world, our most effective weapon against COVID-19 is a face mask that costs a few dollars. To borrow a cliché, we are bringing a knife to a gunfight. Millions of knives perhaps but knives nonetheless. All along, we have been ignoring other technical measures (or the guns) that are readily available and cost effective. And, very importantly, these measures do not require public behavior modification.

Germicidal UV light and HEPA filtration are two technical measures, backed up by scientific research, that can play a significant role in mitigating the spread of the virus. Upper air germicidal UV has been proven to decrease measles and TB spread in public spaces. The virus that causes COVID-19 is even more susceptible germicidal UV than those bugs. In-duct UV systems kill airborne pathogens as air is recirculated through the HVAC system. In room HEPA filter systems effectively remove viruses from the air. Unfortunately, a business will not install any of this equipment unless their local Public Health agency recognizes its effectiveness and allows the business to return to some kind of normal operation.

Even more important than helping individual businesses, widespread application of these technologies could not only stop the current pandemic, but prevent future pandemics as well as the seasonal outbreaks of colds and flu at a fraction of what has been spent on the COVID-19 response. Keep in mind, these technologies do not sterilize the entire airspace – they will never guarantee that no one will ever get infected. They do, however, reduce the concentration of virus in the airspace thus reducing the chance of spreading infection. If one person can only infect one other person (or fewer) at a time, the pandemic will fade away. Isn't time we seek out mitigation measures hidden in plain sight rather than strictly following the flawed Public Health Model?