COVID-19 shows disconnect between scientific and medical professions

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Credit Bill Gates for stating years ago that the most important war we people on earth face is the war with germs[1,2]. However, a professor of biology Paul W. Ewald in his book "Plague Time", states 'If the true culprit is not suspected, we have little recourse for controlling it.' In 1990, he put his prediction in print; "We will fail to see a recurrence of a pandemic influenza with the kind of lethality that characterized the 1918 pandemic." The Spanish Flu killed a lot of people because it was highly infectious and because large groups of troops and people suspected of the disease were put in the same quarantine space together. Now, in 2020, we have repeated the same situation; quarantining people suspected of having been exposed to the disease in hospitals, cruise ships, and barracks without any proactive measures to limit its transmission.

Today's news quote doctors talking about coughing and sneezing as the major pathway for CoV disease transmission. Otherwise, they imply that asymptomatic people must be transmitting the disease, missing the critical feature discussed by many technical articles over the last 5 years. In his 2002 book Plague Time, he states that 'evolutionary perspective is still foreign to most influenza researchers. Those germs of the present that best convert our bodies into their own propagation will be the germs of the future. Surprisingly, neglect of the germ's-eye view of the world …. extends to medicine for most of history.' Germs want to use the food of their hosts for their own reproduction, but to compete for 'survival of the fittest'; they want to reach as many uninfected members as possible of the society'.

Last year, several technical articles reported that many bacterial and viral pathogens are emitted in aerosols in every exhale[2]. They can range from a few to over 1000 per breath. Articles as early as in the 1960's suggested reasons for influenza and infectious diseases spikes during the fall and winter months. In 2006-7, two articles reviewed aerosol transmission of influenza A virus[3,4]. Last January 15, a new article[5] proved that when the relative humidity (RH) drops below 25%, aerosols that humans exhale with each breath can remain airborne for over 3-6 hours. When the RH is above 65% (Spring and Summer season), these aerosols will last less than 15 minutes in the air, significantly reducing infection availability. This same article found through testing that the common influenza only took 3 viral particles (in a 1-micron aerosol bubble) to reach the lower part of a human lung to cause an infection. The disease was most serious if it reached the lower respiratory tract instead of impacting the intranasal area.

It appears most do not realize that we see examples of how this can occur each year in New England. It is known as steam fog when a cold breeze flows over a warm lake, the warm water evaporates in the low RH air to form very small aerosols. This also takes place in our lungs with each inhale and the tiny aerosols that form will contain viral particles or bacteria of a sick patient. We see the result of this by watching football players exhale at a cold game when the aerosols freeze and turn white in the very cold air.

Plague Time reveals that the most durable pathogens make for the most dangerous. Paul cites that the smallpox virus was viable out to 13 years and may be longer because the researchers ran out of viral samples. Technical papers show that virus containing aerosols can be transmitted by people days before any noticeable symptoms occur. But any disease can produce extremes in virulence ranging from pathogens controlled by body defenses to pathogens resistant to those defenses. A recent report from the UK showed that children with underdeveloped immunity systems can become transmitters of the disease without showing symptoms. Isn't it possible that a person with CoV virus could transmit viral particles for a period of time, and after a period of no transmission begin to transmit the disease weeks later with a different virus strain that beats the body's defenses? How often has the medical community checked for this condition?

Most important, however, is the mention in the earlier review[3] of the protein binding site (alpha 2,3) for the current H5N1 avian influenza virus. Humans have many more alpha 2,6-linked sialic acid receptor sites making them a poor host for this virus. But it requires just a change of 1 or 2 amino acid substitutions to become the H1N1 pandemic strain of 2018 virus and for it to bind preferentially to the alpha 2,6 site. The problem is, we don't know what strain will exceed the 2% mortality ratio of the current CoV. When a higher mortality rate strain develops, there will be little human immunity to the new virus. We have an example of this in Plague Time. The myxoma virus wiped out 95% of any infected rabbits in Australia in the 1950's. Most likely, the major human pandemic will begin during the late fall lasting through early spring on each continent as it goes around the world.

The medical community needs to share the mortality and morbidity facts with the technical community. We need these numbers and facts to help best understand the true culprit and how it works. Dr. Lee's death doesn't fit the demographics that are currently being presented. Medical transparency is the key to getting this right and using this information to find a solution(s).

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To prepare and prevent potential pandemics, we must look to the Achilles heel of our society and how diseases spread so rapidly. Global public transportation[6] (PT) in 2017 carried 53 billion passengers for an increase of 9 billion in 5 years. In the US, APTA (American Public Transportation Association) says it transported 38 million per week or 10.1 billion in 2017. At a 2% infection rate, Americans would get sick at almost 4 million per week or over 32 million is just two months! Health care facilities would be overwhelmed. All forms of PT move people in tight quarters locally and around the world in times short enough for bacterial and viral incubation without detection or symptoms.

Airplanes all have low relative humidity during flight which means everyone on board is potentially inhaling aerosols from every passenger on the plane. Analysis of the commercial airliner that brought the SARS passenger to Canada in 2003 showed that people in 5 of the 7 separate plane air flow sections became infected during the flight. This was done by considering exhales as the major transmission source and not the coughs, sneezes, or personal contact. To make matters worse, the United States Air Force, in a weapon of mass destruction study[7], showed that HEPA filters do not effectively capture very tiny viral particles. The filters began to pass live viruses as soon as they were introduced into the incoming air stream.

Like the computer hardware designer and the software developer, cooperation and respect by both technical researchers and the medical community will achieve the greatest progress towards protecting humanity. We may have reached the time in pathogen evolution that the best evidence (like astronomy) relies on correlational evidence. A method is required that can quickly and visibly detect the present of viral and bacterial pathogens in the exhale breath of people (and animals).

To be proactive in preventing disease transmission, Paul mentions a "decisive technology" is required. I believe from all my work that it is the Far-UV Sterilray™ lamps which are destructive enough, fast enough, and easiest to commercialize. These have been demonstrated to have single-pass capability achieving destruction of over 9,900 viral particles in 1/8 second (~80,000 per second) as the air passes the lamp. The 222nm wavelength is shown to rupture the sidewall of bacteria and segment spores as well.

One lamp in a room should prevent all the occupants from inhaling enough measles virus from an infected person because of its 'single-pass-kill capability[11]. Similarly, lamps in the ventilation system of all public transportation vehicles (airplanes are most important) will provide the maximum degree of protection to all riders and is the only proactive means for reducing airborne bacteria and viruses as they are introduced into the air by human exhaling. A 222nm lamp on buses that completely change the air every minute would keep the air clear of any pathogenic viruses. Far-UV Sterilray™ lamps have demonstrated over 30,000 hours of continuous operation. And as Paul states; "decisive technologies are not only better; they are also cheaper".

Plague Time was first published by First Anchor Books Edition, January 2002.

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