Good morning,

I wanted to reach out to you regarding recent decisions and statements made in response to SARS-COV-2 virus pandemic by NIH, CDC, and the administration. I realize the enormous pressures that all of you have faced, and I would like to continue to be as helpful as possible in our efforts in dealing with this crisis. Therefore, I feel it is important that I attempt to briefly raise one of the major concerns that I have at this time.

I have been studying intra-host viral evolution of RNA respiratory viruses as a core part of my research since 2007, and from my experience and understanding of the current data and biology; the current strategies of mass and mandated vaccination is extraordinarily problematic, practically unrealistic, and possibly detrimental.

Variants of RNA respiratory viruses as you know are to be expected, but they only become dominant if the mutation gives the virus a fitness advantage. Early in pandemics the mutations that take hold are ones that adapt the virus to humans giving the virus a replicative advantage. As you are fully aware we saw this happen very rapidly during the first months of the pandemic. A year later in this late/post-pandemic period we now have variants taking hold that are not simple human adaptation but are a response to immunity. These variants do not emerge in the naïve or unvaccinated but emerge in response to people with waning immunity, those who have been previously infected or vaccinated. They can then infect the naïve and spread, but they emerged from those who were immune not the unvaccinated naïve. This was also to be expected based on everything we know from RNA respiratory virus pandemics/epidemics of the past.

Vaccinating the naïve does nothing to stop the spread of these variants because you are always playing catch-up. In fact, it is possible that by vaccinating the naïve you are simply further selecting for these variants which will have an unknown effect on the trajectory of the viral evolution. Under no man-made selection pressures viral evolution will drive the virus to become more replicative and less dangerous to humans. This is simple selection and logic. The virus wants to replicate, and it can’t replicate and spread if humans are dead or in an

ICU. Therefore, as in all past pandemics the viruses slowly change, become human adapted to become more contagious, but less deadly. 1918 influenza is a perfect example of that as there was no man-made pressures at that time and the virus mutated, adapted to natural immunity through antigenic drift and circulated until 1957 with a far lower mortality rate than during the 1918 pandemic. Natural immunity driving viral evolution and the invention of good supportive care such as the invention of antibiotics improved the situation, not a vaccine.

In this case we are making certain mistakes that have been made with influenza vaccination for the last few decades. We have a single antigen vaccine strategy inducing limited immunity that is effective for a time in many, but then offers an opportunity for the virus to evolve to evade this immunity as it wanes. The only way this type of vaccine strategy might work to stop a pandemic is if you are able to vaccinate every person on earth at the exact same time (within days) with a nearly 100% effective vaccine in all people, something that is completely unrealistic. Otherwise, you have a situation where people have waning immunity at different times and the virus is able to evolve and evade immunity.

At best what we are doing with mandated mass vaccination does nothing and the variants emerge evading immunity anyway as they would have without the vaccine. At worst it drives evolution of the virus in a way that is different from nature and possibly detrimental, prolonging the pandemic or causing more morbidity and mortality than it should. There is evidence that yearly flu vaccination has done this during certain years, and further study is necessary. Either way coercing or forcing people to take a vaccine can have negative consequences from a biological, sociological, psychological, economical, and ethical standpoint and is not worth the cost even if the vaccine is 100% safe.

A more prudent approach that considers these issues would be to focus our efforts on those at high risk of severe disease and death, such as the elderly and obese, and do not push vaccination on the young and healthy any further. This uses the vaccine for maximum benefit to reduce morbidity and mortality while limiting the effect you are likely having on natural evolution of the virus and development of a more robust immunity in the population. You also do not lose political capital and trust of the public as has been happening with the current strategy. In the meantime, our focus should be on two things. The development of treatments for SARS-COV-2 and SIRS/sepsis as well as developing more broadly

protective beta-coronavirus vaccines that use multiple antigen strategies inducing not only antibodies against a single antigen, but against multiple antigens as well as inducing mucosal, cellular, and other forms of immunity more like the response one has to a full infection. Vaccines such as this would likely be far more effective in these situations and need to be aggressively pursued. Jeff Taubenberger and I have been working on this and I know others are as well. In addition, I believe that the new mandates are a major mistake and should be rescinded immediately. This will not do any good and will cause biological and/or social harm to the medical community and our country as a whole.

I am happy to discuss this further or offer my thoughts and expertise at any time. Thank you for considering this and I hope you take it into account as you discuss the current response with the CDC and current administration.

Thank you,
Matt
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