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Editorial

Pandemic Success or Global Leadership Failure? How History Will Look at it

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The year 2020 will be remembered in history as one of the most monumental years. The COVID-19 pandemic has created havoc, affecting more than 59 million people globally, with a death toll greater than 1.4 million people worldwide [1]. The messages from global leaders have been at odds with the scientists and the public health authorities, especially in the United States. While the global threat was dealt with at a fast pace, the virus had been downplayed by politicians and leaders in an effort to minimize the financial and economic impact of the pandemic, which in reality exacerbated these impacts.

The virus was initiated in the Wuhan, Hubei Province of China in December 2019. By January 2020, the pathogen was identified as a novel coronavirus and was subsequently named SARS-CoV-2. By February 2020, the World Health Organization (WHO) gave the novel virus its now commonly known name COVID-19. From China, it spread to other Asian countries, to Europe, and then to the USA [2]. The global efforts to come up with a vaccine and therapeutic treatments began at a pace unparalleled to anything prior to this pandemic. Thousands of drug trials from repurposing drugs to potential drugs were initiated in record time. Information-sharing became very fluid. Preliminary data was published as if there was no tomorrow in sight. Millions of manuscripts have been published in less than a year. The peer-review standard was lowered, as a result of the race to get the information out first to the public. Press releases and Wall Street became the prime source of scientific knowledge dissemination, overtaking the power and knowledge in peer-reviewed journals. Everyone treating the COVID-19 virus became an expert and unorthodox therapies were utilized alongside therapies with a sound scientific basis. While early intubation of a patient with COVID-19 was thought to be lifesaving, it turned out to be a catastrophe. Moderate to high doses of anticoagulation felt to prevent micro and macro embolic complication, so far failed to show benefit. Dexamethasone has been shown to improve mortality among sick, hospitalized patients who are on supplemental oxygen based on the recovery trials [3]. The antiviral therapy, Remdesivir, has been controversial, with the National Institute of Health recommending it based on the ACTT-1 trial results [4] and WHO recommending against it based on the Solidarity trial, creating more confusion to all. Based on randomized double-blind control trial data [5], Remdesivir is indicated for hospitalized patients with COVID-19. The strongest evidence of benefit was seen in patients who were on supplemental oxygen, and less so in patients not on oxygen or mechanical ventilation. In patients on oxygen, Remdesivir is safe and expected to reduce time for recovery and also an improvement in clinical status by 2 weeks compared to patients who do not receive Remdesivir [4].

Although the WHO trial was conducted in 30 countries on over 11,000 patients, there were significant limitations in the study as a result of having no placebo condition, no double-blinding (needed to prevent information bias, treatment assessment bias, adherence bias, follow up bias), a lack of rigorous data monitoring, no timing of symptoms duration before treatment initiation, and unknown baseline physiological severity (needed to ensure equal prognosis). The interleukin therapies have also been met with the same confusion and emerging data has conflicting results [6]. Monoclonal antibodies, which have been touted as lifesaving and a breakthrough therapy, especially very early in the disease course, have managed to get the Emergency Use Authorization (EUA) but again, the cost and availability remain a challenge [7]. Numerous nonconventional therapies such as Vitamin C, Vitamin D, Zinc, Thiamine, and Mela-

tonin have been used, but data for those therapies are inconclusive at the best.

Vaccine development on the other hand, started globally at an incredibly fast pace. Several pathways for vaccine development were entertained at the same time. From messenger RNA based vaccines to vector base, protein subunit, and inactivated vaccines. The results for the vaccines thus far have been far better than expected. The vaccine development, which under normal circumstances could have taken 3 - 10 years to develop, has been developed in less than a year. With four vaccines, Oxford University/ Astra Zeneca, which utilized the genetically modified viral-based technology showed an efficacy of 62 - 90%. Moderna laboratory mRNA-based vaccine showed an efficacy of 95%, Pfizer/BioNTech, mRNA-based vaccine with an efficacy of 95%, and Gamaleya (Sputnik V) viral-based technique with an efficacy of 92%. Both the Gamaleya and the Oxford vaccines can be stored at a refrigerated temperature, whereas the Pfizer vaccine can be stored at -70^{0}C degrees and the Moderna vaccine can be stored at -20^{0}C, and for up to 6 months can also be stored at refrigerated temperature [8]. Besides these four vaccines, several more vaccines are in the pipeline to have the global population vaccinated to achieve herd immunity.

In conclusion, the year 2020 has been a roller coaster of a ride and history may remember this year in two different ways. The first, as a failure to deploy public health measures such as rapid testing, contact tracing, quarantining, wearing a face mask, and physical distancing implementation to contain the pandemic. The second, in a more positive light, where the vaccine and therapeutics development speed (especially the vaccine, both mRNA and vector-based) serves as a milestone which will be cherished by scientists for years to come. I truly hope that we are seeing the light at the end of the tunnel.

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