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Editorial

COVID-19: Who Bears the Cost of Vaccine? Nay Sayers?

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Since the first case of SARS-CoV-2 starting from the fish market in the Wuhan, Hubei province China in December 2019 and being declared a pandemic by Mar 11, 2020, the world has felt its effect [1]. As of September 2021, 233 million people worldwide have been infected, and 4.78 million people globally succumbed to this disease [2]. In the USA, the death toll due to COVID-19 has already exceeded the death toll of the Spanish flu of 1918 [3].

The COVID-19 has brought the scientist and the physician community working together rapidly to search for therapies for the prevention and treatment of the disease. On the other hand, miscommunication, misinformation, and politicization of the disease were also witnessed to an extent which the world has never seen before. The world heard the news of Pfizer, then Moderna and J&J vaccine approval in the USA, and globally, Astrazeneca, Sputnik, Cansino, Sinopharm vaccine made their way through the approval process, helping the global population and bringing hope to the possibility of ending the pandemics [4].

Vaccine approval and rollout remained a challenge globally. Developed countries started vaccinating their population at a record pace, and in the USA, once 40% of the targeted population was vaccinated, reaching the remainder of the population posed a significant challenge. To inoculate the larger population, incentives were used, but misinformation and politics resulted in a considerable population refusing to get vaccinated despite it being given free. During this controversy, the USA had a surge with delta variants, especially in the Southern states. This resulted in very high hospitalization and high mortality, placing an enormous burden on the healthcare and the frontline workers. This wave was different from the previous one as more than 95% of the patients admitted to the hospital with COVID-19 were unvaccinated. Most of a patient going on a mechanical ventilator and life support were unvaccinated, despite the vaccines being readily available. The therapeutic choices during this surge have improved from steroid, Remdesivir, and Tocilizumab to include additional medications as Baricitinib, Tofacitinib, and Sarilumab [5].

Due to significant shortage in the hospital beds in those regions hit hard with the delta variant, the government decided to set up infusion clinics and started distributing monoclonal neutralizing antibodies free of charge to the selected group of patients who are at high risk for serious illness and hospitalization (mainly unvaccinated population), to prevent the healthcare institution from collapsing in those hard-hit regions.

Three SARS-CoV-2 monoclonal antibodies have received the emergency use authorization (EUA) by the Federal Drug Administration (FDA). In the randomized placebo-control trial, these monoclonal antibodies have been shown to decrease the risk of hospitalization and death in non-hospitalized patients with mild to moderate COVID-19 symptoms. These monoclonal therapies included

- Bamlanivimab plus etesevimab
- Casirivimab plus imdevimab
- Sotrovimab

The details of the activity of these monoclonal antibodies are shown in table 1. The distribution of Bamlanivimab plus Etesevimab was placed on hold on Jun 25, 2021, but with the surge of Delta variant, it was resumed on Sept 2, 2021 [5].

Variant	Bamlanivimab plus Etesevimab	WHO Label	Ca-sirivimab plus Imdevimab	Sotro-vimab
B.1.1.7	Active	Alpha	Active	Active
B.1.351	Unlikely to be active	Beta	Active	Active
P.1	Unlikely to be active	Gamma	Active	Active
B.1.617.2	Likely to be active	Delta	Active	Active

Table 1: Activity of monoclonal antibodies against the variants.

The recommendation for using monocloSSnal antibody for the COVID-19 by the FDA had the following criteria as shown in table 2. With the surge in delta variant and 95% of the hospital admission being unvaccinated or partially vaccinated patients, the criteria were modified to include the unvaccinated and partially vaccinated people. As of September 2021, WHO also added Casirivimab plus Imdevimab for high-risk patients for preventing hospitalization and mortality [5].

High-risk population for having severe COVID-19
Age > 65 years
Obesity with BMI>30
Diabetes
Cardiovascular Disease
Chronic Pulmonary Disease
Immunocompromised Conditions
Pregnancy
Renal failure
Neurodevelopmental disorder

Table 2: High-risk population studied during monoclonal antibodies trials.

The monoclonal antibodies cost at least 100 times more than vaccination. The concern is rising as why the general population should pay for the monoclonal antibodies in the patients who have refused to take the vaccination. The vaccine prevents the illness in the person taking it and prevents disease transmission to other persons. In contrast, the monoclonal antibodies protect against SARS-CoV-2 in only the individual taking it. Having said this, it can open an ethical question for why several preventable diseases as chronic obstructive pulmonary disease and lung cancer, occur due to smoking, cirrhosis due to alcohol use, and heart disease due to high cholesterol, which is due to dietary habits and sedentary lifestyle leading to several chronic diseases should be paid by the general population.

In conclusion, vaccination offers the best modality to help achieve herd immunity, and education and transparent messaging can help achieve it, rather than the blame game.

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Volume 5 Issue 12 December 2021