

# COVID-19 Vaccine Efficacy

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The highly contagious SARS-CoV-2, (COVID-19), has put huge pressure on the health-care system worldwide. In order to trick the immune system into producing response different vaccines varying technologies have been developed. In Pakistan so far around seven different COVID-19 vaccines are being administered.<sup>1</sup> Most of the vaccines are designed for two doses schedule while few are single dose. Some like Pfizer use messenger RNA (mRNA), other like AstraZeneca hijack adenovirus, while others like Sinopharm use the more traditional method of using an inactivated virus.<sup>2</sup> This has led to significant reduction in clinically significant coronavirus disease cases as well the number of asymptomatic infection and the associated infectivity. As of this writing on 14<sup>th</sup> July 2022 Pakistan has 128,114,044 (58%) fully vaccinated and 137,719,583 (62.3%) single dose vaccinated people.<sup>3</sup>

According to FDA efficacy of the vaccine depends broadly on its capability to impede transmissibility of the pathogen and limits the progression of disease.<sup>4</sup> A review article on that Phase III clinical trials conducted in Argentina, Bahrain, Egypt, Morocco, Pakistan, Peru, and the United Arab Emirates (UAE), has reported that Pfizer and Moderna are the most effective among all the vaccines with 95% effectiveness while the Vaxzevria, Sputnik V, Sinopharm, and Cansino have shown 70%, 91.6%, 79.34%, and 90% effectiveness, respectively.<sup>5</sup> Evidence suggests that overall the vaccines provide around 78% protection against all symptomatic disease after 2nd dose while 79% protection against severe disease or hospitalization from 21 days after 1st dose.<sup>6</sup> Despite above the available data has also shown COVID breakthrough infections that might range from being asymptomatic to having mild symptoms (seasonal allergies, common cold). Others might complain of headache, fever, diarrhea and shortness of breath.<sup>7</sup>

The role of vaccination in reducing the

incidence and mortality of COVID-19 not only in a controlled environment but also in a real world scenario is quite clear.<sup>6</sup> However, limited data is available in Pakistan and lot of data is still required on the vaccines breakthrough infections, and the possible correlates of protection and infectivity. Data on patient's demography, type of vaccine administered, type of strains, precautionary and safety measures, clinical and laboratory characteristics, and the course of the disease needs to be collected and analyzed.

Policy makers before embarking on any decision regarding vaccination coverage and booster doses must take into consideration all the available research and understand with open mind about the future of their people living with this virus especially in vague of the new strains, efficacy of the vaccines towards these new variants, the waning immunity, and the need to know who needs to be boosted and how often.

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