

Long-Term Care Updates

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COVID-19 Vaccine Efficacy After One Dose

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Introduction:

Both Moderna and Pfizer-BioNTech have developed COVID-19 vaccines which received Emergency Use Authorizations from the FDA in December of 2020. Both of these require a two-dose series for the best protection against COVID-19. The second doses are given 3 and 4 weeks after the first dose of the Pfizer-BioNTech vaccine and Moderna vaccine, respectively. However, it is unclear if patients will receive some protection from COVID-19 infection between the first and second doses. This article will address COVID-19 vaccine efficacy after a single dose.

Moderna COVID-19 Vaccine:

Prior to releasing complete results of its phase 3 trial, Moderna conducted an interim intention to treat analysis to measure the efficacy of its mRNA-1273 vaccine in patients who had only received one dose at that time. Overall, 7 patients out of 996 in the treatment arm were later diagnosed with COVID-19 vs. 39 patients out of 1079 in the placebo arm. The difference between groups was statistically significant, and vaccine efficacy after a single dose was calculated to be 80.2% (95% CI 55.2% to 92.5%) after a median follow-up time of 28 days. Vaccine efficacy was calculated as 1 minus the ratio of incidence rates between groups (treatment/placebo).¹

Looking more specifically at the time from vaccination to diagnosis, 5 patients in the treatment group versus 11 patients in the placebo group were diagnosed with COVID-19 1-14 days post-vaccine. The difference between the treatment and placebo group during this timeframe was not statistically significant (vaccine efficacy=50.8% [95% CI -53.6% to 86.6%]). However, the difference between groups was significant for cases diagnosed > 14 days post-vaccination. Two patients in the treatment group and 28 patients in the placebo group were diagnosed with COVID-19 during this timeframe (vaccine efficacy=92.1% [95% CI 68.8% to 99.1%]). These results suggest that, after one dose of Moderna's COVID-19 vaccine, considerable protection is conferred 14 days later.¹

Pfizer-BioNTech COVID-19 Vaccine:

Results from Pfizer-BioNTech's phase 2/3 vaccine trial also suggest that considerable efficacy against COVID-19 infection is conferred after a single dose of the BNT162b2 vaccine. From the available efficacy population at the time, a total of 39 cases of COVID-19 were reported between the first and second doses in 21,314 subjects receiving the vaccine as compared to 82 cases of infection in 21,258 subjects receiving placebo, resulting in a vaccine efficacy of 52.4% (95% CI 29.5% to 68.4%).²

Conclusion/Recommendations:

Both the Moderna and Pfizer-BioNTech COVID-19 vaccines demonstrate statistically significant efficacy between the first and second dose. However, these results should not be used to support the decision to receive only one dose of either vaccine, as most patients in the single-dose data set ultimately went on to receive a second dose. The long-term efficacy after receiving only a single dose of either of these vaccines is unclear.

References:

- 1.) Vaccines and Related Biological Products Advisory Committee Meeting. FDA Briefing Document. Moderna COVID-19 Vaccine. Available at: <https://www.fda.gov/media/144434/download>. Accessed: February 23, 2021.
- 2.) Pfizer-BioNTech COVID-19 vaccine – efficacy after one dose. Pfizer Medical Information. January 7, 2021.

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