

Effectiveness of Pfizer Vaccine BNT162b2 Against SARS-CoV-2 in Americans 16 and Older: A Narrative Review



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INTRODUCTION

- ❖ World Health Organization (WHO) declared the COVID-19 outbreak a global pandemic on March 11th, 2020.
- ❖ Effectiveness of Pfizer BNT162b2 in preventing primary infection evaluated at 95% effective but results from more recent studies provide different numbers.
- ❖ WHO states that protection from vaccine begins 12 days post first dose and second dose given 21-28 days post 1st dose for full protection.

RESULTS

- ❖ Out of the 5 clinical trials, there was a total of 39, 902 participants
- ❖ Four of the clinical trials concluded that efficacies of 2 doses of vaccination of the BNT162b2 was approximately an average of 93%
- ❖ Participants were tested with RT-PCR after 2nd dose at least 7 days after and up to 2 more months or more of follow-up for positive SARS-CoV-2.
- ❖ In the 5th clinical trial, pseudo vaccination assay determined that between vaccinated and non-vaccinated participants > 7 days post second dose of BNT162b2, sensitivity to be 100% and specificity 99%. The participants that got their 2nd dose <7 days after the first dose, sensitivity dropped to 93%. Titers for participants that received 2 full doses of BNT162b2 >7 days apart were 2016 compared to 167 if second dose was given <7 days after the first dose.

METHODS

Inclusion and Exclusion Criteria

- ❖ Inclusion Criteria- Studies conducted the in United States. Americans 16 years old and older. individuals who have received both doses. Positive diagnosis of SARS-CoV-2 virus is thru a positive RT-PCR test
- ❖ Exclusion Criteria- Individuals that are immunocompromised and have autoimmune diseases. Studies with animal test subjects. Studies that are longer than 25 pages. Participants did not have current SARS-CoV-2 infection or previous SARS-CoV-2 infection

Eligibility Criteria:

The eight chosen articles were divided amongst the four authors. They comprised 3 clinical trials, 1 meta-analysis, 1 systemic review, and 2 observational studies.

Efficacy:

- BNT162b2 vaccine as preventing SARS-CoV-2 infection at least 7 days after the second dose of the vaccine in clinical studies. The participants were tested for infection after at least 7 days to see if there was any evidence of serologic or virologic SARS-CoV-2 infection.

According to Pfizer, Efficacy:

- Requires clinical and epidemiological studies monitoring vaccinated individuals for several weeks after inoculation with the first dose. Second is the ability of vaccines to block transmission

Effectiveness:

- A meaningful intervention for individuals with the vaccine in the general population.

CONCLUSION

Conclusion:

After a thorough review of the research literature, the authors have concluded that the efficacies of BNT162b2 vaccine after 2 doses is an average of approximately 93%. None of the participants had adverse reactions, other than mild symptoms such as chills and fatigue according to the research articles.

Limitations:

- ❖ The research articles did not consistently define efficacy or effectiveness
- ❖ There was a large quantity of articles from Boolean search
- ❖ The location of the research limited the scope for the topic of interest
- ❖ It is a novel virus, there were finite number of articles published regarding the pico question

Future Considerations:

- ❖ The effect of BNT162b2 vaccine to prevent other SARS variants such as Delta, Omicron, and other future variants that emerge
- ❖ The efficacy after the booster vaccination, in addition to the 2 doses of BNT162b2
- ❖ Effect of vaccination in immunocompromised patients and patients with autoimmune disease

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