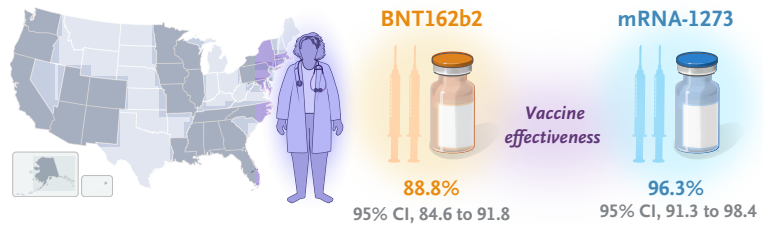


Effectiveness of mRNA Covid-19 Vaccine among U.S. Health Care Personnel

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CLINICAL PROBLEM

When the BNT162b2 (Pfizer–BioNTech) and mRNA-1273 (Moderna) Covid-19 vaccines were first authorized in the United States, health care personnel were among those prioritized for vaccination. Interim real-world results on the effectiveness of the vaccines in this group have been published, but longer-term data, including results in subgroups at high risk for severe Covid-19, are needed.



STUDY DESIGN

A test-negative case-control study estimated the effectiveness of the BNT162b2 and mRNA-1273 vaccines among U.S. health care personnel at 33 sites across 25 states. A total of 1482 personnel with at least one Covid-19-like symptom who tested positive for SARS-CoV-2 between late December 2020 and mid-May 2021 were matched to 3449 personnel who tested negative (controls). Participants' vaccination status was assessed, and vaccine effectiveness against symptomatic Covid-19 was estimated.

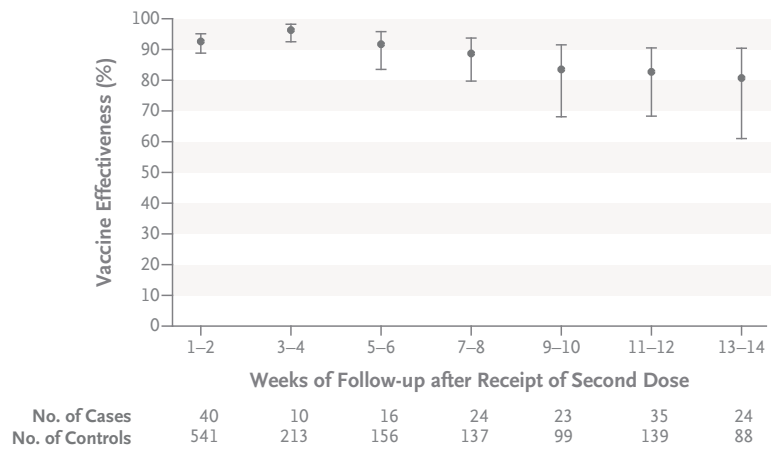
RESULTS

Complete Covid-19 vaccination — defined as receipt of two doses of BNT162b2 or mRNA-1273, with at least 7 days since the second dose — was noted in 11% of the case participants and 31% of the controls. The estimated effectiveness of complete vaccination was high and was similar with the two vaccines. High effectiveness was observed across subgroups defined according to age, race and ethnic group, presence of underlying medical conditions, and level of patient contact.

LIMITATIONS AND REMAINING QUESTIONS

- Health care personnel with known previous SARS-CoV-2 infection were excluded from the study, but persons with unknown previous infection could not be excluded.
- The full duration of protection afforded by the vaccines is unknown, including protection against SARS-CoV-2 variants of concern.

Estimated Adjusted Effectiveness of mRNA Vaccines According to Time Since the Second Dose



Estimated Effectiveness of Complete mRNA Vaccination According to Risk Factors

Risk Factors no./total no. (%)	Case Participants (N=1472)	Control Participants (N=3420)	Vaccine Effectiveness (95% CI)
Age <50 yr	130/1128 (12)	810/2568 (32)	90.3 (86.5 to 93.0)
Age ≥50 yr	36/331 (11)	256/816 (31)	90.7 (84.2 to 94.6)
Obesity	49/529 (9)	321/1068 (30)	92.1 (87.6 to 95.0)
Pregnancy, assessed for partial and complete vaccination	6/62 (10)	28/91 (31)	77.1 (32.2 to 92.2)

CONCLUSIONS

Both the BNT162b2 and mRNA-1273 vaccines were highly effective in preventing symptomatic Covid-19 in U.S. health care personnel in a real-world setting, including those with chronic conditions and other risk factors for severe disease.