

# Comprehensive new review of COVID-19 vaccines shows they are effective

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A comprehensive review of all the evidence available from randomized controlled trials of COVID 19 vaccines up to November 2021 has concluded that most protect against infection and severe or critical

illness caused by the virus.

The review, performed by a collaboration of independent, international experts, also found there was little or no difference between the number of people experiencing serious side effects after vaccination compared to those who were unvaccinated.

The researchers, led by Isabelle Boutron, Professor of Epidemiology at Université Paris Cité and Director of Cochrane France, analyzed published data from 41 randomized controlled trials of 12 different COVID-19 vaccines, involving 433,838 people in various countries around the world. They assessed the certainty of the evidence and the risk of bias in the different studies.

The trials compared COVID-19 vaccines with [placebo](#), no [vaccine](#), or each other, and were published before 5 November 2021. Most trials were no longer than two months in length.

The review found that the following vaccines reduced or probably reduced the risk of COVID-19 infection compared to placebo: Pfizer/BioNTech, Moderna, CureVac COVID-19, Oxford-AstraZeneca, Janssen, Sputnik V (Gam-COVID-Vac), Sinopharm (WIBP CorV and BBIBP-CorV), Bharat (Covaxin), Novavax and Soberana 2 (Finlay-FR-2).

The following reduced or probably reduced the risk of severe or critical disease: Pfizer/BioNTech, Moderna, Janssen, Sputnik V, Bharat and Novavax. In addition, the Janssen and Soberana 2 vaccines probably decreased the risk of death from any cause. There were very few deaths recorded in all the trials and so evidence on mortality for the other vaccines is uncertain.

For most of the vaccines investigated, more people who had been

vaccinated reported localized or temporary side effects compared to those who had no treatment or placebo. These included tiredness, headache, muscle pains, chills, fever and nausea. With respect to the very rare side effects associated with some vaccines such as thrombosis, the team found that the reporting of these events was inconsistent, and the number of events reported in the trials was very low.

Given the evidence of efficacy of these vaccines, the researchers question whether further placebo-controlled trials are ethical. They suggest that further research should compare new vaccines with those already in use.

The current review analyzed data available up to November 2021. Since then, analyses have been updated and will continue to be made publicly available every two weeks by the COVID-NMA Initiative, which provides live mapping of COVID-19 trials. A living, systematic review of clinical trials is available to researchers and policymakers alike on the COVID-NMA platform. This enables the team to provide the most up-to-date evidence on which to base further research and decisions about prevention and treatment for COVID-19.

Prof. Boutron said, "The evidence on COVID-19 vaccines is constantly changing and updating. Everything moves so quickly that by the time the next Cochrane review is published, or other papers are published, the data are likely to be out of date. There are more than 600 randomized trials of vaccines registered at present, and about 200 of them are recruiting. COVID-NMA is the only initiative that continues to monitor the developing evidence from trials and provides a platform for researchers to conduct their own analyses via the metaCOVID tool on the website.

"Researchers, clinicians and policymakers have to take very rapid decisions about what to do to prevent and treat COVID-19. I hope that

this initiative will help them to have access to the most up-to-date evidence on which to base their decisions."

**More information:** Efficacy and safety of COVID-19 vaccines, *Cochrane Database of Systematic Reviews* (2022). [DOI: 10.1002/14651858.CD015477](https://doi.org/10.1002/14651858.CD015477)

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