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Covid-19: "Mix and match" primary vaccines are safe and effective, study finds

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Having a different covid-19 vaccine after a single dose of the Oxford-AstraZeneca or Pfizer-BioNTech vaccines is safe and effective and could further boost the immune response, a study of 1000 UK volunteers has found.[1]

The phase II non-inferiority Com-COV2 study assessed the effect of having a dose of the AstraZeneca, Pfizer, Moderna, or Novavax vaccine after an initial dose of AstraZeneca or Pfizer in 1072 participants.

The results, reported in the *Lancet*, showed that having a dose of the Moderna vaccine after an initial AstraZeneca or Pfizer dose induced a higher binding and neutralising antibody response than seen after two doses of either AstraZeneca or Pfizer.

A dose of the Novavax vaccine after AstraZeneca was also found to be superior to two AstraZeneca doses for inducing antibody and T cell immunity. However, a Novavax dose after Pfizer did not meet the non-inferiority criteria for binding antibodies, which work against the SARS-CoV-2 spike protein, when compared with two Pfizer doses, although the antibody concentrations were still higher than those observed with two AstraZeneca doses.

While many people in high income countries have already had their two primary covid-19 vaccination doses, only 6.2% of people in low income countries have so far received at least one dose of a covid-19 vaccine.[2]

In light of this, the researchers said these new findings could help boost the rollout of primary covid-19 vaccines in low income countries by enabling a mix of vaccines to be used.

Flexible vaccination schedules

Speaking at a Science Media Centre briefing on 6 December, Matthew Snape, chief investigator on the trial, said, "What we have seen is that there's a great amount of flexibility in the primary immunisation schedule. Just because you receive dose 1 of a particular vaccine doesn't mean you are locked into dose 2, especially in low income countries where it is very relevant to have a flexible and adaptable immunisation programme."

He said it was encouraging that a high antibody and T cell response could be generated without using mRNA vaccines—instead through the AstraZeneca vaccine followed by Novavax—meaning that the logistics and complications regarding keeping these vaccines very cold could be avoided.

Richard Hatchett, chief executive officer of the Coalition for Epidemic Preparedness Innovations, which part funded the study, said, "With covid-19 cases continuing to rise and the emergence of new variants like omicron, it is imperative that we rapidly protect as many people as possible from this devastating virus. As has long been said, no one is safe until everybody is safe, and we hope that today's trial findings will contribute to our work to achieve this vital goal.

"[These are] extremely encouraging and valuable data on the potential to mix and match covid-19 vaccines in primary immunisation schedules. Knowing that a second dose of a different covid-19 vaccine can generate a robust immune response is advantageous in helping the rollout of covid-19 vaccines through Covax, especially in populations still urgently waiting for their primary immunisation or in those partially vaccinated."

1 Stuart ASV, Shaw RH, Liu X, et al. Immunogenicity, safety, and reactogenicity of heterologous COVID-19 primary vaccination incorporating mRNA, viral-vector, and protein-adjuvant vaccines in the UK (Com-COV2): a single-blind, randomised, phase 2, non-inferiority trial. *Lancet* 2021 (published online 6 Dec). https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)02718-5/fulltext

2 Our World in Data. Coronavirus (covid-19) vaccinations. https://ourworldindata.org/covid-vaccinations