

Three doses of the same or mixed COVID jabs work equally well against infections

31 May 2022



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Three doses of either the same vaccine or a combination of different vaccine types work comparably well in preventing COVID-19 infections, even against different variants, finds a study published by *The BMJ* today.

The findings suggest that the number of vaccine doses seems to be the key to improving immunity rather than the combinations of vaccine types (which includes mRNA and adenoviral vector vaccines only in this study), and should help inform future public health decision making, say the researchers.

While the effectiveness of individual vaccines for COVID-19 are well known, the effectiveness of vaccine combinations is less clear, especially for particular groups, such as [older people](#) and those who are immunocompromised.

Despite a [rapid decline](#) in COVID-19 infections and deaths, concerns about waning vaccine immunity and new variants makes it important to understand which vaccine combinations are most effective.

To explore this, researchers at the Chinese University of Hong Kong (CUHK) searched 38 WHO COVID-19 databases for published studies and preprints on a weekly basis from 8 March 2022.

They identified 53 studies involving over 100 million participants with 24 combinations of approved COVID-19 vaccine courses (regimens) and 7 different vaccine types for analysis.

Receiving three doses of the same vaccine is known as a homologous regimen, while receiving a [third dose](#) that differs from those given as primary doses is known as a heterologous regimen.

After taking account of differences in [study design](#) and quality, the researchers found that three doses of any mRNA vaccine appear to be most effective (96%) against non-severe COVID-19 infections and most effective (95%) in reducing COVID-19 related hospital admission.

Using an mRNA booster after two doses of adenovirus vector vaccines also has a satisfactory effectiveness of 88%.

The results also show that any three dose regimen (heterologous or homologous) induces higher immunity in all age groups, even in the over 65s, than a two dose homologous regimen.

A third booster dose is needed to prevent [infection](#) caused by the omicron variant.

And in immunocompromised patients, a third mRNA booster dose, as part of a heterologous or homologous regimen, greatly improves protection compared with two doses.

However, the effectiveness of three dose vaccine regimens against COVID-19 related death remains uncertain.

These are statistical analyses of observational and randomized controlled trial findings. The researchers acknowledge that they didn't evaluate the optimum time interval for prime boost or boosting regimens, owing to [limited information](#).

Nevertheless, this is a well-designed study that summarizes the effectiveness of all available COVID-19 [vaccine](#) regimens and determines the relative effects of various primary and boosting regimens as assessed in current clinical studies.

As such, the researchers conclude that while a three dose mRNA regimen seems to be the most effective in preventing COVID-19 infections, any heterologous and homologous three dose regimens work comparably well in preventing COVID-19 infections, even against different variants.

This study is a living [systematic review](#), so will be updated as new evidence becomes available.

More information: Effectiveness of heterologous and homologous COVID-19 vaccine regimens: living systematic review with network meta-analysis, *The BMJ* (2022). [DOI: 10.1136/bmj-2022-069989](#)

Provided by British Medical Journal

APA citation: Three doses of the same or mixed COVID jabs work equally well against infections (2022, May 31) retrieved 9 June 2022 from <https://medicalxpress.com/news/2022-05-doses-covid-jabs-equally-infections.html>

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