

Hybrid immunity

January 21, 2023

In news— According to a new study, individuals with hybrid immunity had the highest magnitude and durability of protection, and may be able to extend the period before booster vaccinations are needed compared to individuals who have never been infected.

What is hybrid immunity?

- Hybrid immunity refers to immunity developed through a combination of SARS-CoV-2 infection and vaccination.
- The World Health Organization defines hybrid immunity as protection in people who've received at least two doses of a Covid vaccine and have been infected with the virus either before or after vaccination.

Key findings of the study-

- **As per the study, the effectiveness of hybrid immunity against hospital admission or severe disease was 97.4 per cent at 12 months** with primary series vaccination and 95.3 per cent at 6 months with the first booster vaccination after the most recent infection or vaccination
- The effectiveness of previous infection against hospital admission or severe disease was 74.6 per cent at 12 months.
- The effectiveness of previous infection against reinfection waned to 24.7 per cent at 12 months.
- **The study reported that all estimates of protection waned within months against reinfection but remained high** and sustained for hospital admission or severe disease.
- 11 studies reporting the protective effectiveness of previous SARS-CoV-2 infection and 15 studies reporting the protective effectiveness of hybrid immunity were

included.

- Against reinfection, the effectiveness of hybrid immunity following primary series vaccination waned to 41.8 per cent at 12 months, while the effectiveness of hybrid immunity following first booster vaccination waned to 46.5 per cent at 6 months.
- Estimates of vaccine effectiveness, i.e., vaccinated vs unvaccinated, against the omicron variant were obtained from the dataset of a systematic review and meta-regression involving 19 studies of both primary series and booster vaccination, of which 18 were primary series studies and 12 were first booster studies.
- **The scientists applied their meta-regression model to the dataset to project the trends of waning vaccine effectiveness,** in parallel with trends for previous infection and hybrid immunity generated from data procured in our systematic review.
- The studies that were included examined protection against reinfection with the omicron variant, in which the exposure group was people with previous infection with any SARS-CoV-2 variant or hybrid immunity and the control group was immune-naive individuals, previously infected individuals, or previously vaccinated individuals, the study said.
- Infection due to the omicron variant was determined by genomic sequencing or inferred on the basis of time periods when the variants were predominant according to the Global Initiative on Sharing Avian Influenza Data (GISAID) EpiFlu database.
- Restricting the spread of SARS-CoV-2 infection and preventing severe COVID-19 remains a priority at the global scale.
- Immunological protection from SARS-CoV-2 can be induced from previous infection or vaccination.
- However, estimating the magnitude and durability of this protection in the population has become a challenge because of the surge in the omicron (B.1.1.529) variant,

which has resulted in many individuals with hybrid immunity, varying rates and timings of past infection and vaccination, multiple types of vaccination and numbers of doses, and variants of concern that can escape pre-existing immunity.