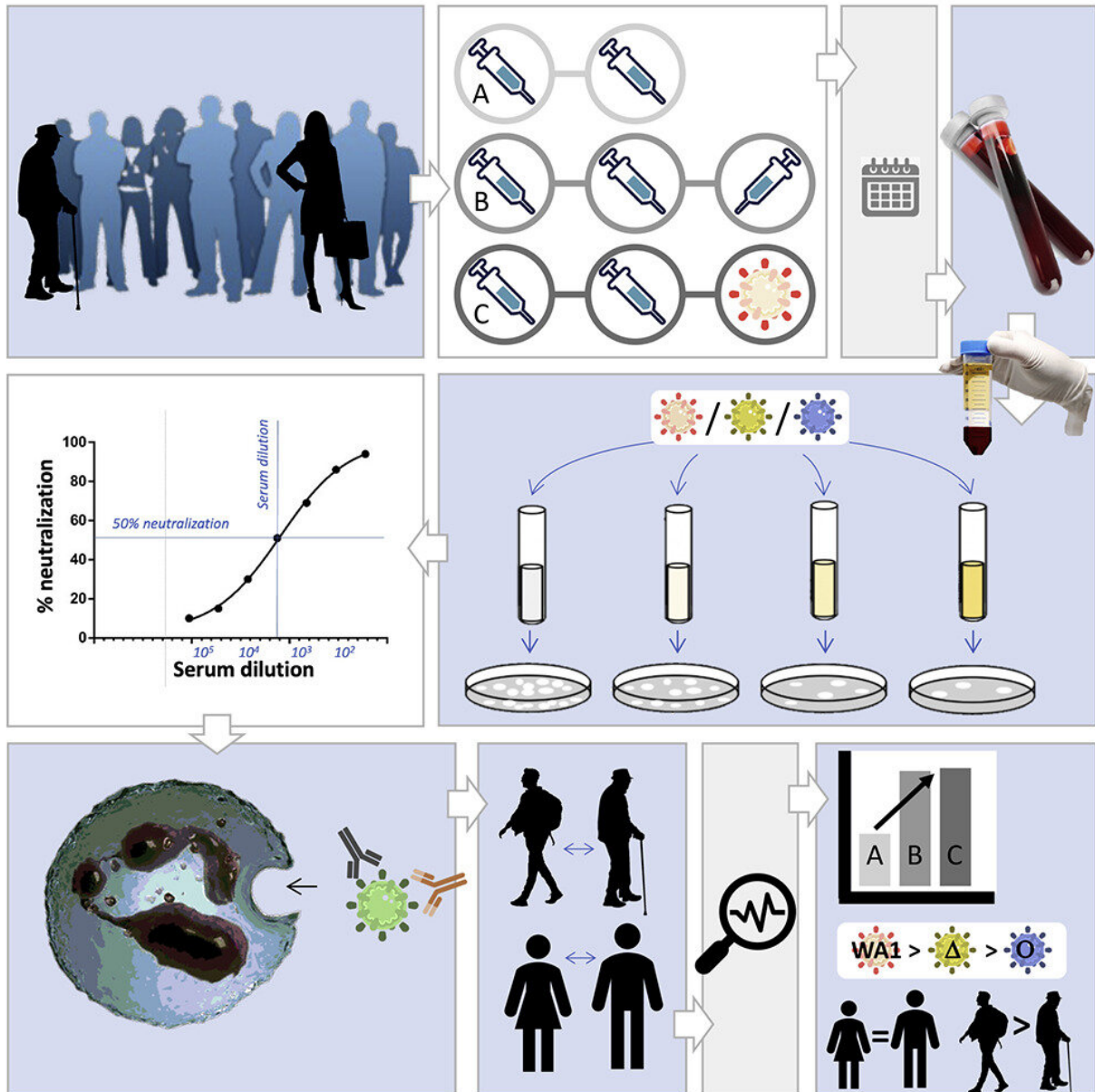


# New study reveals breakthrough infections increase immunity to COVID-19

September 22 2022, by Erik Robinson



Graphical abstract. Credit: *Med* (2022). DOI: 10.1016/j.medj.2022.09.001

Vaccine boosters and breakthrough infections following vaccination both provide a substantial and potentially pandemic-breaking immunity against COVID-19, according to new laboratory research from Oregon Health & Science University.

The study, published Wednesday in the journal *Med*, is the latest in a series of OHSU discoveries using [blood samples](#) to characterize [immune response](#) to the SARS-CoV-2 virus.

"As the number of omicron subvariant cases rise and as global vaccination and booster campaigns continue, an increasing proportion of the world's population will acquire potent immune responses that may be protective against future SARS-CoV-2 variants," the researchers conclude.

The research measured a powerful immune response among samples from 99 OHSU employees who had blood drawn for the research. Notably, researchers measured an equally potent immune response to the virus—with dramatic increases in magnitude, potency and breadth—among people whose blood was drawn three months after a third vaccine booster dose and another group one month after a breakthrough infection.

In addition, the study found the immune response was just as powerful among people 65 and older.

"Early in the pandemic, we had very high mortality in certain [vulnerable groups](#), such as [older adults](#) in nursing homes, but that reality is slowly changing," said co-senior author Marcel Curlin, M.D., associate

professor of medicine ([infectious diseases](#)) in the OHSU School of Medicine and medical director of OHSU Occupational Health. "Our study bolsters the idea that vaccination is a pathway to a milder illness. Even if you're older, your chances of having a [severe illness](#) if you're re-infected down the line appears to be much lower than it was at the start of the pandemic."

Co-senior author Fikadu Tafesse, Ph.D., associate professor of molecular microbiology and immunology in the OHSU School of Medicine, said he would expect an even more robust immune response among people receiving the new bivalent vaccine booster targeting the BA.4 and BA.5 variants.

"We anticipate that updated vaccine strategies with variant-specific regimens will significantly improve the breadth of the immune response and provide better protections against the SARS-CoV-2 variants," he said.

In contrast to the onset of the pandemic, the SARS-CoV-2 virus is no longer "novel" to the human immune system. Most people in the world have now been vaccinated, infected or both—meaning the virus is running up against a much more effective immune response with each new infection.

Curlin said the new study most likely reflects the fact that the virus is evolving to become more transmissible but less harmful.

"Evolutionary pressure is driving the virus to find more ways to infect people at the cost of pathogenicity, most likely," he said. Pathogenicity refers to the capacity to cause symptoms associated with the disease.

**More information:** Marcel E. Curlin et al, Omicron neutralizing antibody response following booster vaccination compared with

breakthrough infection, *Med* (2022). [DOI: 10.1016/j.medj.2022.09.001](https://doi.org/10.1016/j.medj.2022.09.001)

Provided by Oregon Health & Science University

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