Study links vaccine immune response to age

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Older people appear to have fewer antibodies against the novel coronavirus, a new laboratory study from Oregon Health & Science University suggests.

Antibodies are blood proteins that are made by the immune system to

protect against infection. They are known to be key players in protection against SARS-CoV-2 infection.

The study published today in the *Journal of the American Medical Association*.

"Our older populations are potentially more susceptible to the variants even if they are vaccinated," said senior author Fikadu Tafesse, Ph.D., assistant professor of molecular microbiology and immunology in the OHSU School of Medicine.

Tafesse and colleagues emphasized that even though they measured diminished antibody response in older people, the vaccine still appeared to be effective enough to prevent infection and severe illness in most people of all ages.

"The good news is that our vaccines are really strong," Tafesse said.

However, with vaccine uptake slowing in Oregon and across United States, researchers say their findings underscore the importance of promoting vaccinations in local communities.

Vaccinations reduce the spread of the virus and new and potentially more transmissible variants, especially for older people who appear to be more susceptible to breakthrough infections.

"The more people get vaccinated, the less the virus circulates," Tafesse said. "Older people aren't entirely safe just because they're vaccinated; the people around them really need to be vaccinated as well. At the end of the day, this study really means that everybody needs to be vaccinated to protect the community."

Researchers measured the immune response in the blood of 50 people

two weeks after their second dose of the Pfizer vaccine against COVID-19. They grouped participants into age groups and then exposed their blood serum in test tubes to the original "wild-type" SARS-CoV-2 virus and the P.1 variant (also known as gamma) that originated in Brazil.

The youngest group—all in their 20s—had a nearly seven-fold increase in antibody response compared with the oldest group of people between 70 and 82 years of age. In fact, the laboratory results reflected a clear linear progression from youngest to oldest: The younger a participant, the more robust the antibody response.

"Older people might be more susceptible to variants than younger individuals," Tafesse said.

The findings highlight the importance of vaccinating older people as well as others who may be more vulnerable to COVID-19, said co-author Marcel Curlin, M.D., associate professor of medicine (infectious diseases) in the OHSU School of Medicine.

"The vaccine still produces strong immune responses compared with natural infection in most older individuals, even if they are lower than their younger counterparts," Curlin said. "Vaccination in this group may make the difference between serious and mild disease, and likely reduces the chances of transmitting SARS-CoV-2 to another person."

More information: Timothy A. Bates et al, Age-Dependent Neutralization of SARS-CoV-2 and P.1 Variant by Vaccine Immune Serum Samples, *JAMA* (2021). DOI: 10.1001/jama.2021.11656

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