

Enhanced flu protection: Adding a second strain of B flu lessens likelihood of mismatched vaccine

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Credit: National Cancer Institute

A flu vaccine given just under the surface of the skin that includes four strains of inactivated influenza could be more protective than a similar flu vaccine containing only three strains, Saint Louis University research found.

These findings, which appear in *Vaccine*, confirmed the expected results, said Geoffrey Gorse, M.D., professor of internal medicine in the division of infectious diseases at Saint Louis University and the study's lead author.

Findings from this study of flu vaccines delivered by a small needle intradermally parallel earlier results that found adding a strain of influenza B could improve the effectiveness of a [flu vaccine](#) nasal spray and a traditional intramuscular vaccine that is injected as a shot in the arm muscle. All studies showed the addition of the B strain improved the antibody response to that strain and didn't weaken the body's immune response to other flu strains in the vaccine.

Flu vaccines can be trivalent - containing two strains of influenza A and one of influenza B - or quadrivalent - including two strains of A and two of B. Both are available to fight influenza.

Scientists create a flu vaccine annually based upon the strains of influenza they predict will circulate for the next season. Despite rigorous modeling practices, the virus in the vaccine occasionally doesn't match the circulating strain of influenza.

There are two lineages of B flu strains, and 50 percent of the time in the past decade, the trivalent vaccine B strain did not match the circulating B strain. The quadrivalent vaccine has both B strains in it.

"We found adding a fourth strain to the vaccine increases the chance the vaccine will match the circulating flu B strains," Gorse said. "At the same time, the addition didn't compromise the vaccine's ability to protect against the other three strains and was just as safe. Over time, the four-strain vaccine may be an important strategy to provide improved protection against influenza."

During the study, 3,355 volunteers who were between 18 and 64 years of age were vaccinated at 38 sites in the United States. They were randomized to receive one of three vaccines: the quadrivalent flu vaccine that contained two A flu strains and both lineages of the B strains; the licensed trivalent intradermal vaccine for the 2012-2013 flu season; or an alternate trivalent intradermal vaccine that contained two A strains and the B strain that was not in the licensed seasonal flu vaccine.

Volunteers who received the quadrivalent vaccine had superior antibody responses to the B strains and equally robust responses to A strains

compared to volunteers who received the trivalent vaccines that did not contain the corresponding B strains.

Further, adding another B strain didn't compromise the vaccine's ability to cause the body to mount an immune response to the other [flu strains](#). The responses of those given the quadrivalent vaccine were the same as those of volunteers who received the vaccine with two [strains](#) of A and the strain of B that matched the B strain in the 2012-2013 seasonal flu trivalent [vaccine](#).

More information: The research was supported by Sanofi Pasteur, the maker of the intradermal vaccines. The article appeared in the print edition of *Vaccine*, Volume 33, Issue 9, (2015) pages 1151-1159 published by Elsevier dated 25 February 2015. The citation is "Safety and immunogenicity of a quadrivalent intradermal influenza vaccine in adults," by Geoffrey Gorse, M.D., Ann R. Falsey, M.D., Ayca Ozol-Godfrey, Victoria Landolfi and Peter H. Tsang, M.D., Ph.D. [DOI: 10.1016/j.vaccine.2015.01.025](https://doi.org/10.1016/j.vaccine.2015.01.025) . www.sciencedirect.com/science/.../S0264410X15000444

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