

Study links 1976 'swine flu' shot to stronger immune response to 21st century pandemic flu

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New evidence shows immunization against "swine flu" in 1976 might provide individuals with some protection against the 2009 pandemic H1N1 influenza virus, according to new research from St. Jude investigators.

Researchers found that individuals who reported receiving the 1976 vaccine mounted an enhanced [immune response](#) against both the 2009 pandemic H1N1 virus and a different H1N1 [flu](#) strain that circulated during the 2008-09 flu season. The work appears in the April 23 online issue of the journal *Clinical Infectious Diseases*.

"Our research shows that while immunity among those vaccinated in 1976 has waned somewhat, they mounted a much stronger immune response against the current pandemic H1N1 strain than others who did not receive the 1976 vaccine," said Jonathan A. McCullers, M.D., an associate member of the St. Jude Infectious Diseases Department and the study's lead author.

McCullers said it is unclear if the response was enough to protect against the 2009 H1N1 virus, but the study points to a lingering benefit. The findings also raise hope that those vaccinated against the 2009 H1N1 [pandemic strain](#) might also enjoy a similar long-term advantage.

The study is the first to focus on whether those vaccinated against the

1976 H1N1 strain made antibodies against the 2009 pandemic flu, including antibodies that could block the virus from infecting cells. This research follows an earlier study from the federal Centers for Disease Control and Prevention that reported blood taken from volunteers shortly after they were vaccinated in 1976 and stored for decades also showed a strong immune response to the 2009 pandemic virus. Investigators noted the results might not reflect the immune response those same volunteers would mount today.

The latest effort involved 116 St. Jude employees and spouses age 55 and older. The group included 46 vaccinated in 1976 against the H1N1 flu virus, known as A/New Jersey/76, which sickened more than 200 military recruits in New Jersey. That outbreak triggered fears of a flu pandemic and led to a massive government effort to quickly produce and distribute a vaccine.

The current study was conducted in August 2009 before a vaccine was available against the pandemic H1N1 flu strain and before the virus was circulating widely in the Memphis, Tenn., metropolitan area, where study volunteers lived.

Researchers reported that nearly 90 percent of volunteers made antibodies able to recognize a key protein on the surface of both the 2009 pandemic and the 2008-09 H1N1 flu strains. Those antibodies were present in numbers large enough to meet one federal gauge of vaccine effectiveness.

Nineteen percent of volunteers also produced antibodies that neutralized the 2009 pandemic strain and blocked it from infecting cells. In comparison, more than 67 percent of volunteers had antibodies that neutralized the 2008-09 seasonal H1N1 strain.

Those vaccinated in 1976 were more likely to make neutralizing

antibodies against the new pandemic strain. More than 17 percent of the 1976-vaccine group made such antibodies in large quantities. Only about 4 percent of those who had not received the 1976 shot had comparable levels of antibody production. The difference between the two groups was statistically significant, meaning it was unlikely chance alone explained the result.

The work reflects ongoing efforts to understand why the current pandemic flu has taken a greater toll on children and young adults than on those ages 65 and older. In this study, researchers focused on older individuals to better gauge the impact of the 1976 "[swine flu](#)" shot or possible childhood exposure to flu viruses similar to the current [pandemic](#) strain. McCullers said those viruses last circulated in the 1930s and 1940s.

The unexpectedly robust immune response mounted by all the volunteers suggests that routine vaccination against seasonal flu might confer a broader-than- realized protection, McCullers said. The St. Jude volunteers included many health care workers who are vaccinated annually against flu.

Provided by St. Jude Children's Research Hospital

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