

Is a 'universal' flu vaccine on the horizon?

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(HealthDay)—Work is proceeding apace on a "universal" flu vaccine capable of protecting humans from all forms of influenza, researchers report.

A single dose of a synthetic universal flu [vaccine](#) called FLU-v appears capable of providing safe long-term protection across a broad spectrum of influenza viruses, a new clinical trial has shown.

FLU-v outperformed a placebo in elevating people's immune response, as measured by a number of different biomarkers related to the immune system, researchers found.

The [experimental vaccine](#) now awaits a phase 3 trial that will test how well it actually protects against the seasonal flu, said lead researcher Olga Pleguezuelos, chief scientific officer at SEEKacure, a London-based pharmaceutical development firm.

FLU-v works by targeting parts of the influenza virus that have been shown to evolve the least over time, Pleguezuelos said.

Influenza has sickened as many as 49 million Americans this season and caused up to 620,000 hospitalizations and 52,000 deaths, according to the U.S. Centers for Disease Control and Prevention.

Current annual vaccines trigger the production of antibodies that [target proteins](#) found on the surface of the flu virus, Pleguezuelos said.

Unfortunately, the virus regions targeted by those vaccine-produced antibodies tend to mutate frequently, requiring the development of new vaccines to keep up with the ever-changing flu bug.

FLU-v targets proteins that don't vary widely between different strains, reducing the ability of influenza to mask itself from the immune system by evolving into a different form, Pleguezuelos explained.

Researchers used computer algorithms to detect which protein regions in flu were likely to induce a strong immune response, and then analyzed

how frequently those regions mutate.

To strengthen that protection, FLU-v also trains the immune system to target multiple flu proteins that typically aren't under evolutionary pressure to mutate, researchers added.

"FLU-v contains four different components against four different regions of the flu virus, so if one changed, three will still provide efficacy," Pleguezuelos said.

In the latest clinical trial, the researchers found the vaccine promoted antibody responses and immune system changes in 175 healthy adults assigned to receive either the flu shot or a placebo.

Side effects were limited mainly to injection site reactions, the researchers reported in the March 9 issue of the journal *Annals of Internal Medicine*.

"In order for the vaccine to reach the market, a phase 3 trial must be carried out to test efficacy and safety in large number of people," Pleguezuelos said. "This type of study is complex and very costly and we are currently in discussions with [regulatory bodies](#) to determine the requirements of such study, and searching for investment and funding."

The results from the latest clinical trial are "very encouraging," said Dr. Amesh Adalja, a senior scholar with the Johns Hopkins Center for Health Security in Baltimore.

"It illustrates that a candidate universal flu vaccine may be possible and sufficiently immunogenic. It will be important to follow this study up with a phase 3 study that looks at efficacy of preventing influenza versus just looking at immunogenicity," said Adalja, who was not part of the study.

"A universal flu vaccine would be a major advance and would change the dynamics between humans and the [influenza virus](#) in a very positive way," Adalja concluded.

The methods used to develop FLU-v also are being utilized to develop potential vaccines against HIV, mosquito-borne pathogens, hepatitis B and C, and rotavirus, Pleguezuelos said.

The same sort of platform also could be used to develop a coronavirus vaccine, she added.

More information: The U.S. Centers for Disease Control and Prevention have more about [the flu](#).

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