Even a 'bad' flu vaccine could save 61,000 lives: study

May 1 2018, by Dennis Thompson, Healthday Reporter

A truly dismal flu vaccine could still save thousands of lives, as long as

roughly 40 percent of Americans got their shots, new research suggests.

At that coverage level, a vaccine that was only 20 percent effective would avert 21 million infections and almost 130,000 hospitalizations—and save 61,000 lives.

Why? Computer modeling shows that the number of people who get vaccinated is more important for protecting lives than the actual effectiveness of each season's vaccine.

"Achieving a high coverage rate is very, very important, even if the vaccine's efficacy is low," said lead researcher Pratha Sah, a postdoctoral associate with the Yale School of Public Health. "Low coverage is worse than a low efficacy vaccine, so it's extremely important for as many people to get vaccinated as possible."

One expert not involved with the research applauded the finding.

"This is an important study that highlights the ability of even a modest vaccine to substantially save lives during flu season," said Dr. Amesh Adalja, a senior scholar with the Johns Hopkins Center for Health Security.

This year's brutal flu season provides the perfect example. Even though the flu vaccine was only 25 percent effective against the severe H3N2 strain that caused the most illness, the vaccine could have been even less effective and still saved tens of thousands of lives, the researchers said.

The average vaccination coverage rate for the past five years has hovered at 43 percent, according to the U.S. Centers for Disease Control and Prevention.

But if no one got the flu shot at all, the researchers estimated that about

130,000 people would die following 77 million infections and 470,000 hospitalizations during a typical flu season.

However, if 43 percent of people got a vaccine with only 20 percent effectiveness, that would still be enough to cut the number of deaths in half.

And a coverage increase to 50 percent of the population would save the lives of more than 8,400 additional people with the same vaccine, along with heading off another 3.6 million infections and almost 22,000 hospitalizations.

"We didn't make an unrealistic assumption that everyone in the United States is going to get vaccinated. That's never going to happen," Sah said. "But if you vaccinate just 10 percent more than what we've been vaccinating, even that small increase in coverage is beneficial for the country overall."

When the researchers directly compared vaccine coverage against vaccine effectiveness, coverage proved key in saving lives:

- A drop in coverage from 40 percent to 20 percent with a 40 percent effective flu vaccine would lead to 39,738 more deaths.
- But a drop in vaccine effectiveness from 40 percent to 20 percent would lead to just 28,343 additional deaths, as long as vaccine coverage remained at 40 percent.

Vaccination coverage is more important than the vaccine's specific effectiveness because of the concept of "herd immunity," Sah explained. Essentially, the more people who are vaccinated, the more protection afforded the entire population.

These findings mean that doctors need to do a better job of targeting crucial groups that spread the flu most widely, Adalja said.

Who are they? Sah said that adults ages 30 to 39 are a prime target for improved vaccination rates.

That age group gets vaccinated the least, but they are a crucial "bridge population" because they have children and come into regular contact with their aging parents, Sah explained. The young and elderly are most vulnerable to infection and death from flu.

"Young adults don't get vaccinated enough," Sah said. "They should be getting vaccinated more, not for their own benefit but for the benefit of their family and their loved ones."

The study was published April 30 in the *Proceedings of the National Academy of Sciences*.

More information: Pratha Sah el al., "Optimizing the impact of low-efficacy influenza vaccines," *PNAS* (2018). www.pnas.org/cgi/doi/10.1073/pnas.1802479115