

## Study: Whooping cough vaccination fades in 3 years (Update)

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The whooping cough vaccine given to babies and toddlers loses much of its effectiveness after just three years - a lot faster than doctors believed - and that could help explain a recent series of outbreaks in the U.S. among children who were fully vaccinated, a study suggests.

The study is small and preliminary, and its authors said the results need to be confirmed through more research. Nevertheless, the findings are likely to stir debate over whether children should get a booster shot earlier than now recommended.

"I was disturbed to find maybe we had a little more confidence in the vaccine than it might deserve," said the lead researcher, Dr. David Witt, chief of infectious disease at the Kaiser Permanente Medical Center in San Rafael, Calif. Witt presented his findings Monday at the American Society for Microbiology conference in Chicago.

The study was done in California, where whooping cough vaccinations are a hot-button issue. The state had a huge spike in whooping cough cases last year, during which more than 9,100 people fell ill and 10 babies died. California schools have turned away thousands of middle and high school students this fall who haven't gotten their booster shot.

Government health officials recommend that children get vaccinated against whooping cough in five doses, with the first shot at age 2 months and the final one between 4 and 6 years. Then youngsters are supposed to get a booster shot around 11 or 12. That means a gap of five to eight

years.

Witt's study looked at roughly 15,000 children in Marin County, Calif., including 132 who got whooping cough last year. He found that youngsters who had gone three years or more since the last of their five original shots were as much as 20 times more likely to become infected than children who had been more recently vaccinated. The largest number of cases was in children 8 to 12 years old.

Whooping cough, or pertussis, is a highly contagious bacterial disease that in rare cases can be fatal. It leads to severe coughing that causes children to make a distinctive whooping sound as they gasp for breath.

Marin County has a reputation for anti-vaccine sentiment, and Witt said that when he started the study he expected to see the illness concentrated in unvaccinated people. But more than 80 percent of the children who developed whooping cough in Witt's study were fully vaccinated.

California health officials told doctors last year that they could give the booster to kids as young as 7 in an effort to stifle the outbreak. Federal health officials said that they are still studying the issue and that it is too soon to make that a standard practice.

At the Centers for Disease Control and Prevention, which makes recommendations on childhood shots, officials acknowledged that the vaccine's protection declines, but they said the agency's own studies show the drop-off is not as pronounced as Witt's research found.

The CDC has estimated that the risk of the disease can increase fourfold several years after vaccination, not 10 to 20 times. One reason may be differences in how a case of whooping cough is defined: Witt counted positive test results, while the CDC also requires more than a week of symptoms.

CDC officials stressed that the vaccination is still much better than nothing - it reduces how sick a child becomes. Also, the nation no longer sees thousands of whooping cough deaths each year, as it did before there was a vaccine.

The shots "are still our best protection against pertussis, and they still protect well against fatal disease," said Dr. Tom Clark, who leads the CDC's epidemiology team focused on vaccine-preventable diseases.

Versions of the vaccine are made by two companies - Sanofi Pasteur and GlaxoSmithKline. The companies have acknowledged that the immunity conferred by the vaccine wanes over time, but they declined to comment on Witt's study.

The type of vaccine given in the U.S. has been in use since the late 1990s. It is typically administered in a combination shot that also protects against tetanus and diphtheria. Nearly every state requires children to get the full series of shots before enrolling in school.

Periodic outbreaks still occur in places with high vaccination rates.

The short-term effectiveness of the vaccine has been shown to be 90 percent or higher in the first couple of years. The long-term effectiveness is not well understood, but researchers thought it was more than three years.

A preliminary study conducted by the CDC last year found the five-dose vaccination for children was about 70 percent effective five years after the last shot. Witt's research suggests the effectiveness may drop much lower than that, perhaps below 50 percent after just three years.

Witt also found that shots work great in the short term. Rates of whooping cough dropped dramatically after kids were age 11 and 12,

when many get the booster shot.

The long-term effectiveness of that booster also is not known and has received relatively little study. Health officials are also discussing whether additional boosters may one day be recommended for teenagers or adults.

"It's a little too soon to say much" about the longer-term effectiveness of that booster, said Lara Misegades, a CDC epidemiologist.

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