

Covid Live Updates: mRNA Vaccines May Offer Lasting Protection, Study Finds

The Pfizer and Moderna shots' effects could last for years, a detailed look at immune responses suggests. Some lawmakers are urging Biden to commute prison sentences for people released early because of the virus.

RIGHT NOW

Mixing Pfizer and AstraZeneca vaccines provides strong protection, according to a preliminary study.

The vaccines made by Pfizer-BioNTech and Moderna [set off a persistent immune reaction in the body](#) that may protect against the coronavirus for years, scientists reported on Monday.

The findings add to growing evidence that most people immunized with the mRNA vaccines may not need boosters, so long as the virus and its variants do not evolve much beyond their current forms — which is not guaranteed. People who recovered from Covid-19 before being vaccinated may not need boosters even if the virus does make a significant transformation.

“It’s a good sign for how durable our immunity is from this vaccine,” said Ali Ellebedy, an immunologist at [Washington University in St. Louis](#) who led the study, which was published in the journal Nature.

The study did not consider the vaccine made by Johnson & Johnson, but Dr. Ellebedy said he expected the immune response to be less durable than that produced by mRNA vaccines.

Dr. Ellebedy and his colleagues reported last month that in people who had survived Covid-19, immune cells that recognize the virus [remained in the bone marrow](#) for at least eight months after infection. A study by another team indicated that so-called memory B cells continue to mature and strengthen for at least a year after infection.

Based on those findings, researchers suggested that immunity might last years, possibly a lifetime, in people who were infected and later vaccinated. But it was unclear whether vaccination alone might have a similarly long-lasting effect.

After an infection or a vaccination, a specialized structure called the germinal center forms in lymph nodes. This structure is an elite school of sorts for B cells.

The broader the range and the longer these cells have to practice, the more likely they are to be able to thwart variants of the virus that may emerge.

After infection with the coronavirus, the germinal center forms in the lungs. But after vaccination, the cells' education takes place in lymph nodes in the armpits, within reach of researchers.

Dr. Ellebedy's team found that 15 weeks after the first dose of vaccine, the germinal center was still highly active in all 14 of the participants, and that the number of memory cells that recognized the coronavirus had not declined.

"The fact that the reactions continued for almost four months after vaccination — that's a very, very good sign," Dr. Ellebedy said. Germinal centers typically peak one to two weeks after immunization, and then wane.

"Usually by four to six weeks, there's not much left," said Deepta Bhattacharya, an immunologist at the University of Arizona. But germinal centers stimulated by the mRNA vaccines are "still going, months into it, and not a lot of decline in most people."

Dr. Bhattacharya noted that most of what scientists know about the persistence of germinal centers is based on animal research. The new study is the first to show what happens in people after vaccination.

The results suggest that a vast majority of vaccinated people will be protected over the long term — at least, against the existing variants. But older adults, people with weak immune systems and those who take drugs that suppress immunity may need boosters; people who survived Covid-19 and were later immunized may never need them at all.

Exactly how long the protection from mRNA vaccines will last is hard to predict. In the absence of variants that sidestep immunity, in theory immunity could last a lifetime, experts said. But the virus is clearly evolving.

— *Apoorva Mandavilli*

Mixing Pfizer and AstraZeneca vaccines provides strong protection, according to a preliminary study.



General practitioner displaying empty vials of the Pfizer and AstraZeneca vaccines in Berlin in April. Credit...Fabrizio Bensch/Reuters

Early results from a British vaccine study suggest that mixing different brands of vaccines can provoke a protective immune response against Covid-19. In the trial, volunteers produced high levels of antibodies and immune cells after getting one dose of the Pfizer-BioNTech vaccine and one dose of the AstraZeneca-Oxford shot.

Administering the vaccines in either order is likely to provide potent protection, Matthew Snape, a vaccine expert at the University of Oxford, said at a news conference on Monday. “Any of these schedules, I think could be argued, would be expected to be effective,” he said.

Dr. Snape and his colleagues [began the trial](#), called Com-COV, in February. In the first wave of the study, they gave 830 volunteers one of four combinations of vaccines. Some got two doses of either Pfizer or AstraZeneca, both of which have been shown to be effective against Covid-19. Others got a dose of AstraZeneca, followed by one of Pfizer, or vice versa.

For the first wave of volunteers, the researchers waited four weeks between doses. Studies have found that the AstraZeneca vaccine provides stronger protection if the second dose is delayed for [up to 12 weeks](#), so the researchers are also running a separate 12-week trial which should deliver results next month.

The researchers found that volunteers reported more chills, headaches and muscle pain than people who get two doses of the same vaccine. But the side effects were short-lived.

Dr. Snape and his colleagues then drew blood to measure the immune response in the volunteers. They found that those who got two doses of Pfizer-BioNTech produced levels of antibodies about 10 times as high as those who got two doses of AstraZeneca. Volunteers who got Pfizer followed by AstraZeneca showed antibody levels about five times as high as those with two doses of AstraZeneca. And volunteers who got AstraZeneca followed by Pfizer reached antibody levels about as high as those who got two doses of Pfizer.

Dr. Snape said that the differences would most likely narrow in the volunteers who get a second dose after 12 weeks, when the AstraZeneca vaccine has had more time to strengthen its effects.

The study also found that using different vaccines produced a higher level of immune cells primed to attack the coronavirus than did giving two doses of the same vaccine. Dr. Snape said it wasn't clear yet why mixing had that advantage. “It's very intriguing, let's say that much,” he said.

Dr. Snape and his colleagues have begun a similar trial, adding vaccines from Moderna and Novavax to the list of possibilities.

For now, he said, the best course of action remains getting two doses of the same vaccine. Large clinical trials have clearly demonstrated that this strategy reduces the chances of getting Covid-19. “Your default should be what is proven to work,” Dr. Snape said.

But there are many cases in which that may not be possible. Vaccine shipments are sometimes delayed because of manufacturing problems, for example. Younger people in some countries have been advised not to get a second dose of AstraZeneca because of concerns about the small risk of developing blood clots. In such situations, it’s important to know whether people can switch to another vaccine.

“This provides reassuring evidence that should work,” Dr. Snape said.

— *Carl Zimmer*