www.medscape.com

Second mRNA Dose Safe After Allergic Reaction to First: Study

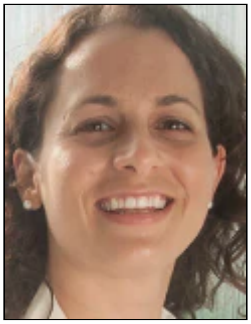
Damian McNamara

July 26, 2021

Find the latest COVID-19 news and guidance in Medscape's Coronavirus Resource Center.

People who experienced an allergic reaction to a first dose of either the Pfizer/BioNTech or Moderna mRNA COVID-19 vaccines safely tolerated a second dose in a retrospective, multicenter study.

The findings, however, contrast with official recommendations on management of an allergic reaction to a first mRNA vaccine dose.



Dr Kimberly Blumenthal

"Our take-home message is that immediate allergic symptoms after mRNA vaccines from Pfizer or Moderna do not preclude their future use," senior author Kimberly Blumenthal, MD, MSc, told *Medscape Medical News* . Blumenthal is an allergist/immunologist and drug allergy researcher at Massachusetts General Hospital and assistant professor of medicine at Harvard Medical School in Boston.

The results were published as a Research Letter July 26 in *JAMA Internal Medicine.*

A total of 32 people in the study, or 17% of 189 with initial allergic reactions, met criteria for anaphylaxis. Flushing or erythema, dizziness or lightheadedness, tingling, throat tightness, hives, and wheezing or shortness of breath were additional first-dose reactions reported.

Out of 189 people with initial allergic reactions, investigators looked at 159 or 84% who completed a two-dose regimen. All patients in this group, including 19 individuals with first-dose anaphylaxis, tolerated the second dose, Blumenthal, lead author Matthew Krantz, MD, and colleagues reported.

Overall, 32 individuals who received a second dose reported immediate and potentially allergic symptoms. "While 20% had symptoms with dose two, the symptoms were manageable and not anaphylactic," Blumenthal said.

"However, it is true that anaphylaxis with dose two would be possible even though we did not observe it in our study," she said.

Mean age of the 189 people in the study was 43 years and 86% were women. Allergic vaccine reactions were reported in the first 3 months of 2021.

Dr Niraj Patel

"While the study is compelling, the numbers are small and there is uncertainty regarding true allergic risk in patients who had anaphylaxis with the first dose of mRNA vaccine. Nineteen of 32 patients with anaphylaxis safely received a second

dose, but it is not known what would have happened with the remaining 13 patients," Niraj Patel, MD, told *Medscape Medical News* when asked to comment.

"More data is needed, but the results look encouraging," added Patel, chair of the American College of Allergy, Asthma, and Immunology (ACAAI) COVID19 Task Force.

"This study confirms that the vaccine is safe for re-administration, under the supervision of an allergist, in cases where there was a suspected first-dose reaction," Matthew Greenhawt, MD, allergist and immunologist and director of the Food Challenge and Research Unit at Children's Hospital Colorado in Aurora, wrote in an email to *Medscape Medical News* when asked to comment.

Greenhawt and colleagues authored a June 2021 systematic review and meta-analysis evaluating risk of allergic reactions to COVID-19 vaccines. The current results are consistent with their findings "where the evidence had suggested these reactions were very rare — though still may occur — and without any clear evidence of a provoking allergen within the vaccine."

Have a Plan

For this reason, Blumenthal suggested all patients who do experience an immediate and potentially allergic reaction to a first mRNA COVID-19 vaccine dose discuss a safe plan to receive the second dose with their physician.

"While we still do not know the allergic component of mRNA vaccines, this study suggests that some patients may tolerate a second dose of the same mRNA vaccine after having an initial allergic reaction," Patel said.

"This is important because in certain patients who had anaphylaxis with the first dose, current recommendations is not to receive a second dose of mRNA vaccine, but rather a non-mRNA vaccine such as Janssen[/Johnson&Johnson] as an alternative second dose," Patel said. He cautioned that the efficacy of such mixed vaccine regimens has not been fully studied.

The CDC, for example, recommends against a second dose of the same mRNA vaccine following a severe initial allergic reaction, one strong enough to require epinephrine or hospitalization. Also, the agency suggests people who have an immediate but less severe allergic reaction should ask their physician about switching to a non-mRNA vaccine for their second shot.

In addition to switching vaccine types, Blumenthal said getting dose two of an mRNA vaccine in a medical facility might be another option.

Blumenthal and colleagues noted that some initial reactions may not have been truly allergic, defined as an IgE antibody response to a component of the vaccine. "This is a subtle but very important point, which underscores multiple other aspects of how some have recommended to evaluate these reactions or persons felt to possibly be at risk for a reaction to this class of vaccine," Greenhawt said.

Premedication Warranted?

"Although it is reassuring that all locations giving mRNA vaccines have anti-allergic medications readily available...we have also recommended antihistamine premedication and increased monitoring as additional safety precautions," Blumenthal said.

Patel was less convinced. He pointed out that only 30% of those in the study received antihistamines "and it is unclear the potential benefits of premedication and who may benefit from it. Furthermore, premedication may give a false sense of security to both patient and provider, particularly those patients who may be at high risk for an allergic reaction."

"I would disagree with their statement that could imply some necessity of pre-medication," added Greenhawt. "This is not supported by data in this study or by other evidence, though this is not an uncommon anecdotal recommendation used by many allergists."

More Urgency With Delta Variant?

Complete two-dose vaccination "has become even more important with the Delta variant. We suspect there are many more people who did not get their second shot because of allergic symptoms," said study co-author Aleena Banerji, MD, clinical director of the Allergy and Clinical Immunology Unit at Mass General and an associate professor at Harvard Medical School.

Dr Aleena Banerji

"It is important to discuss this with your doctor and consider allergist input," she added.

The ACAAI provides more guidance on risks of allergic reactions to COVID-19 vaccines, including recommendations for screening patients prior to injection. They also point to the most likely culprit behind mRNA vaccine allergic reactions.

"The suspected inciting ingredient for allergic reactions is polyethylene glycol (PEG)," Patel said. He added that 80 of 189 patients were skin-test negative to PEG, "suggesting that these individuals were at a lower risk for an allergic reaction with a second dose of mRNA vaccine."

The study by Blumenthal and co-authors builds on smaller case series that had confirmed that the second dose could be safely administered under supervision, Greenhawt said.

"However, it is reassuring to see a larger collection of cases in this series confirm the same findings, which hopefully can help reassure clinicians and patients needing further reassurance that this is safe to re-administer," he said.

Blumenthal reported grants from NIH/National Institute of Allergy and Infectious Diseases during the conduct of the study. Patel, Greenhawt, and Banerji have disclosed no relevant financial relationships.

JAMA Intern Med. Published online July 26, 2021. Full text

Damian McNamara is a staff journalist based in Miami. He covers a wide range of medical specialties, including infectious diseases, gastroenterology, and critical care. Follow Damian on Twitter: @MedReporter.

For more news, follow Medscape on Facebook, Twitter, Instagram, and YouTube.

Cite this: Damian McNamara. Second mRNA Dose Safe After Allergic Reaction to First: Study - *Medscape* - Jul 26, 2021.