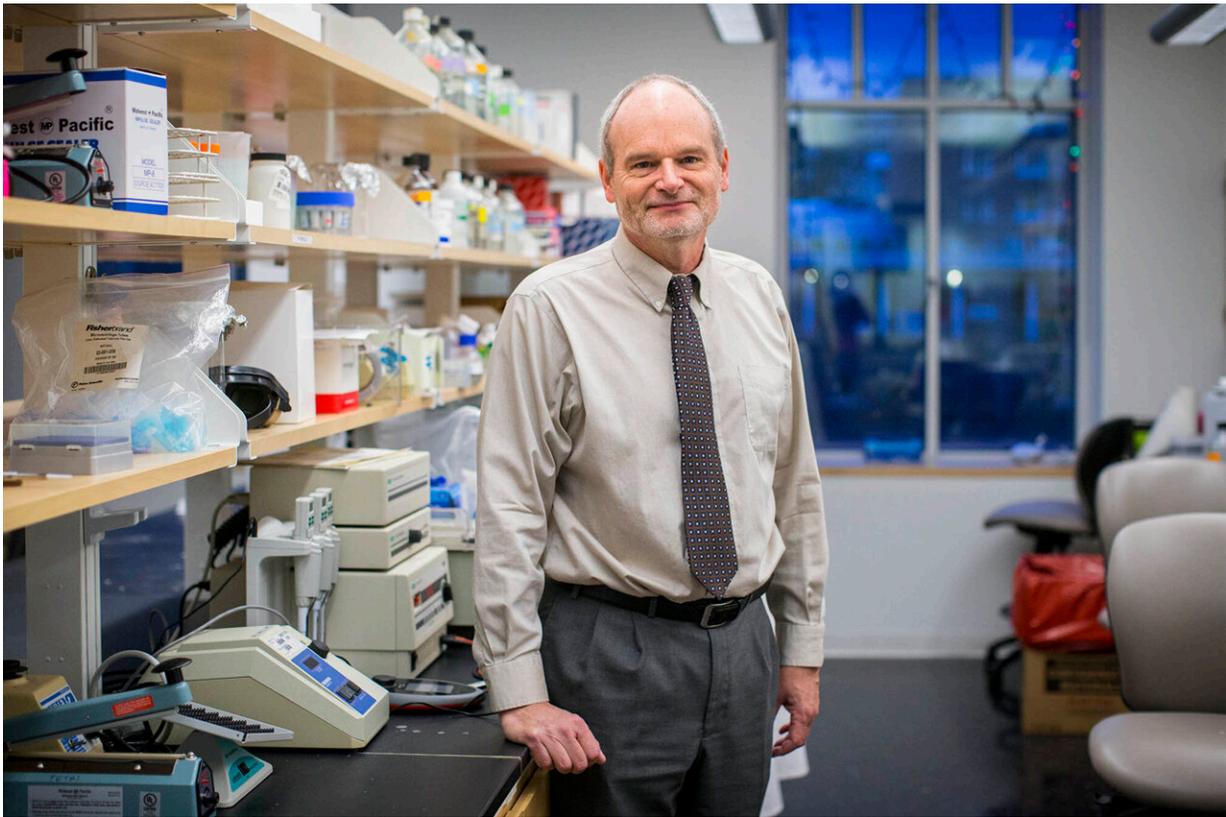


# How does mixing and matching COVID-19 boosters work?

October 21 2021, by Jane Kelly

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Dr. William Petri is the Wade Hampton Frost Professor of Medicine and vice chair for research of the Department of Medicine. Credit: Sanjay Suchak, University Communications

On Wednesday, the U.S. Food and Drug Administration authorized

Moderna and Johnson & Johnson booster shots and also said Americans who are fully vaccinated against COVID-19 can receive a booster shot of a vaccine that is different from their original injection.

Presently, those who received a Pfizer or Moderna vaccine can get a [booster shot](#) if they are 65 or older, work in high-risk industries like [health care](#) and education, or have underlying conditions that make them vulnerable to COVID-19. If you originally received the single dose Johnson & Johnson vaccine and are 18 or older, new guidance says you are now eligible for a [booster](#).

New data shows that adopting the practice of mixing vaccines is safe and effective.

UVA Today reached out to Dr. William Petri, an expert in [infectious diseases](#), with questions about this latest development and others about the current state of the pandemic, which exploded in the United States in March 2020.

## **Q. What is a booster and why should people get one?**

A. A booster is just an additional dose of a vaccine, and we do that all the time. The diphtheria, tetanus and [pertussis vaccine](#) is boosted every 10 years, for example.

The reason for giving boosters is probably twofold. One is that the memory that the [immune system](#) has for a vaccine wanes over time. In the case of diphtheria, after 10 years or so, you need to kind of "remind" the immune system, so to speak, and make memory against diphtheria, tetanus and pertussis in that example.

The other reason to give a booster, specifically to COVID 19, is that this delta variant, which accounts for 99% of all COVID infections in the

U.S., is a little bit harder to neutralize than was the alpha variant, which was the one that was from the U.K.

Those are probably the two reasons that we're seeing that the efficacy of the vaccines is waning, and that's especially the case for the Pfizer vaccine, and maybe a little bit less so for Moderna.

The Pfizer booster has been approved for booster shots, and all indications are that the FDA will give emergency use authorization for Moderna and for the Johnson & Johnson vaccine.

### **Q. What have studies shown about the safety and efficacy of getting a booster shot that is different from a person's original vaccine?**

A. Two studies in Germany, one out of Hanover and one out of Hamburg; they took advantage of the fact that they temporarily halted giving the AstraZeneca vaccine because of the association of their vaccine with a very rare clotting disorder in women. So, some people got their second dose not of the AstraZeneca vaccine, but of the Pfizer mRNA [vaccine](#), and they were able to compare people and they found that if you mix them instead of matching them you got a better neutralizing antibody response.

The NIH supported the Center for Vaccine Design at University of Maryland to do a [third] mix-and-match study. They took every combination imaginable of the three vaccines—Moderna, Pfizer and J & J—every combination. Basically, what they found was that they all work perfectly well and they all result in about an average twenty-fold increase in neutralizing antibodies.

Basically, there's no way to go wrong with this sort of [mix-and-match]

approach, based on the Maryland study.

Provided by University of Virginia

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