

Why and when to get a bivalent booster

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Credit: Will Kirk/Johns Hopkins University

The original COVID-19 boosters did a great job of preventing severe illness and hospitalization, even during the delta surge. Then came omicron and its subvariants, which are more transmissible than previous variants and easily evade immunity from both infection and vaccines.

The boosters needed an update—and they got it, with both [Moderna and Pfizer receiving FDA authorization in September](#) for new bivalent boosters targeting both the original strain of SARS-CoV-2 and omicron subvariants BA.4 and BA.5.

Yet people aren't clamoring for the better boosters: It has been about a month since bivalent boosters became widely available, but only 7.6 million eligible Americans have gotten the shots, according to data released last week by the Centers for Disease Control and Prevention.

Maybe that's because a high rate of recent infections means shots aren't yet needed by people with immunity from having had COVID in the summer or early fall. But others might not be aware that they or their family members are eligible for the new vaccines—including adults under 50 and parents of children 12 and up, says virologist Andy Pekosz, a professor in Molecular Microbiology and Immunology at the Johns Hopkins Bloomberg School of Public Health.

In this Q&A, adapted from the Oct. 3 episode of Public Health On Call, Pekosz talks about what makes bivalent boosters different and more effective, who should get the bivalent shot and when, and whether it's safe to get it at the same time as the flu shot. Read on for your primer on bivalent boosters.

What is the bivalent booster?

The bivalent [booster](#) is the most recent version of the COVID-19 vaccine. It contains both the original vaccine strain [of the virus] and a strain derived from the BA.5 omicron variant, which is currently dominating here in the U.S., so that we can maximize protection against severe disease and potentially from infection.

Who should be getting one and when?

"Who?" is the easy question. The booster is approved for individuals over the age of 12—Pfizer for some age groups and Moderna for other age groups. The recommendations for when to get the booster are a little less clear right now. The CDC has put out their overall plan for how individuals who are not vaccinated should go through their vaccine schedule: two doses of the original mRNA vaccine, spaced three to four weeks apart; and then two to three months later, a dose of this bivalent booster. But most of us are way past that, and some have also had infections that have boosted our immune responses. Guidance for those situations is not yet clear on the CDC website. We're really relying on scientists to make some recommendations for that.

I had COVID almost two months ago. When would I need my booster shot?

Infection following vaccination really boosts your immune response. Vaccinated people in that scenario have protection anywhere from four to six months, so a lot of immunologists will say you probably don't want a boost while you're protected. If you are vaccinated, four to six months after your infection is probably when a booster would give you the best effect in terms of not only strengthening your current immunity, but also giving you long-term immunity that will last for hopefully a year or even longer.

So this booster may be the one that will protect us for the longest time?

As long as we don't have another odd variant emerge from out of left field, which we never can never predict. But right now, everything looks fairly good in terms of omicron variants that are circulating. The

omicron in the bivalent vaccine seems to be well matched to the majority of variants that are circulating right now.

Should people who've had two initial doses and two booster shots be getting this booster now?

Yes, because the bivalent booster will give you a better response to the currently circulating variants. And again, if you've had the boosters on top of the initial vaccination, I think you can wait about four to six months after that last booster to get this bivalent booster. Because again, we're now shifting from the pandemic strategy—getting immunity as fast as possible to as many people as possible—to the strategy of getting long-term immunity to people. Hopefully we can avoid having boosters every few months to try to maintain protection in the population.

Should kids and teens who had the original vaccines and a booster get the bivalent booster?

Yes. And again, four to six months after that last booster is a good time to get the bivalent booster. That will increase your [immune system's] long-term memory, as well as give you better protection against the circulating viruses.

At the beginning of the pandemic, it was really straightforward: You were either infected or you weren't. And then we got the vaccine. Now we have combinations of vaccination and infection. Maybe some people got infected and then vaccinated; maybe some people got infected before the booster and then got a booster afterward. All of these different combinations are going to give a slightly different [immune response](#). It's getting more and more difficult to make simple, straightforward statements about what's best for people because there's so much difference in their immune responses based on their exposure

history.

Can you get the flu shot and the new booster at the same time?

Absolutely. CDC says there's nothing wrong with getting both at the same time. I think it's probably one of those situations where if you're going in to get one, it's probably good to get the other. We know from past experience that when people go in to get one vaccine and say, "Well, I'll get the next one in a week or two," a lot of them never come back. If you have the opportunity to get both, I would say get them at the same time. Both will be aiming to do the same thing: protect from severe disease. Many of the populations that are vulnerable to severe COVID are the same populations that are vulnerable to severe influenza.

Is there any advantage to spreading them out?

Not really. The people who have been studied who have gotten both together don't report any different side effects, any different adverse effects. If you do feel the need to split up your vaccines, get your COVID booster first because there's a lot more COVID around right now than flu, and then go back and get your flu shot. But there really isn't any reason why you shouldn't get both at the same time.

Are we seeing any changes in the side effects from the bivalent booster?

No, everything's the same as has been reported with the original bivalent booster. It's important to note that the dose of this bivalent booster is exactly the same as the dose of the previous booster. It's just that there are two different forms of the spike protein in the vaccine. All the reported side effects are essentially the same as with the boosters.

What do we know about how well the bivalent vaccine actually works?

The FDA saw data from both Moderna and Pfizer in June that showed that a bivalent vaccine induced better responses against omicron than another dose of the original booster vaccine. Up until then, they had tried bivalent vaccines with other variants, but they never performed better than the booster with just the original vaccine strain.

Then, in June, the [omicron] bivalent booster data showed that it was better [than the original booster]. But the FDA went one step ahead and said, "The data we saw was with another omicron variant, BA.1. But we know that BA.5 is now dominating," So, they told the vaccine manufacturers to update that BA.1 to BA.5. In hindsight, that looks like a great move because we are maximizing the match between the circulating viruses and the vaccine strains.

What that means, though, is that we don't have long-term studies in terms of how efficacious it is with this specific BA.5. We can infer from all the other studies that it will be good. But that's the data we're trying to collect through a number of studies going on right now.

Why has it taken so long to deliver an omicron-specific variation of the vaccine?

They were developed quickly. The [clinical trials](#) that were reported to the FDA in June were actually initiated back in February and March—about a month or two after omicron emerged. In fact, the omicron vaccines were put into place very quickly. The change in June to update to BA.5 caused them to go back to the drawing board and make new vaccines.

But think about it: In three months, we have nearly 100 million [vaccine](#) doses. It's really an amazing scientific advancement to be able to do that, at that scale and in that timeframe.

Is vaccine-induced immunity better than immunity from infection?

Vaccine-induced immunity is better because it's safer, and it induces the kind of immunity that is going to protect you from disease. When you get infected, you have all these other symptoms from the virus wreaking havoc in your system. The bivalent booster, particularly on top of an infection, is going to strengthen your immune responses to very high levels and do so in a safe way.

It will be important for individuals who've been infected to get the bivalent booster. The spacing will be the thing to think about—again, that four- to six-month window is what you need to strengthen [immune] responses and help them turn into long-term immunity.

Are you concerned that confusion about the new booster will make it harder for us to get people vaccinated with it?

Communication on this issue has to be very clear and careful. Much of the guidance is being left to individuals and medical providers to decide, and that is going to breed different responses from different people. And that breeds confusion and hesitancy.

I'm hopeful that over the next couple of weeks, we're going to get clear guidance from the CDC about how to deal with boosters in these other contexts we've just described—people who've been infected, people who've been fully boosted, and how much time there should be before

getting the bivalent booster. We need to get this guidance relatively soon, but again, we have to do the studies to get the data to make those firm recommendations.

Provided by Johns Hopkins University

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