

Why you're not getting a delta-specific booster yet

It's in clinical trials, but many experts say you don't need a tailored vaccine for this variant.

By Sigal Samuel | Sep 27, 2021, 2:50pm EDT



We use cookies and other tracking technologies to improve your browsing experience on our site, show personalized content and targeted ads, analyze site traffic, and understand where our audiences come from. To learn more or opt-out, read our [Cookie Policy](#). Please also read our [Privacy Notice](#) and [Terms of Use](#), which became effective December 20, 2019.

By choosing **I Accept**, you consent to our use of cookies and other tracking technologies.

I Accept

When scientists created **mRNA vaccines** for Covid-19 last year, they were hailed as an almost miraculous breakthrough. And not just because the Pfizer/BioNTech and Moderna shots were amazingly effective. mRNA technology was a radically new way to make vaccines, and it came with a huge selling point: It would enable scientists to reformulate the vaccines in response to new variants — and fast.

Which raises the question: Where's our customized vaccine for the delta variant that's been ravaging the globe for months now? Where's that **plug-and-play solution we were told to expect?**

It's been somewhat slow to come, and we'll get to the reasons for that in a bit. But it's certainly not because the mRNA technology is more sluggish than scientists thought.

To see why scientists were right to be excited, consider how making an mRNA vaccine differs from making a more traditional vaccine. One reason why vaccines have traditionally taken a long time to produce is that scientists have to grow lots of pathogens (or parts of pathogens) in the lab before they can introduce them into the human body so the body will learn to recognize them.

In the case of the novel coronavirus, they'd normally have to grow lots of coronavirus spike proteins — the part the virus uses to attach to human cells — in the lab.

With mRNA vaccines, scientists found a genius way to sidestep this, accelerating the process by months. They identified the genetic sequence that creates the spike proteins and used that set of "instructions" in the vaccine, prompting our own bodies to produce the proteins in the virus. Those proteins then prime our immune systems. Researchers effectively **outsourced the work** from their lab to our cells.

We use cookies and other tracking technologies to improve your browsing experience on our site, show personalized content and targeted ads, analyze site traffic, and understand where our audiences come from. To learn more or opt-out, read our [Cookie Policy](#). Please also read our [Privacy Notice](#) and [Terms of Use](#), which became effective December 20, 2019.

By choosing **I Accept**, you consent to our use of cookies and other tracking technologies.

I Accept

And in fact, the effort to make a delta-specific vaccine is in full swing. Pfizer/BioNTech and Moderna are on the case, and we may see these vaccines become available in the coming months. But here's the thing: We might not actually need them.

Delta-specific boosters are in clinical trials

The quick answer to the question, "Where are the delta-specific vaccines?" is simple: Pfizer/BioNTech and Moderna have already produced customized, delta-targeted vaccines.

But figuring out how to create bespoke spike proteins is just the first step. Now the drugmakers are testing how well these retooled vaccines can work as boosters.

Pfizer/BioNTech is testing out a **reformulated vaccine candidate** specifically targeting delta. Clinical trial results are anticipated in the fourth quarter of the year. A vaccine to target the beta variant is also under investigation. (First identified in South Africa, **beta proved alarmingly adept at evading immunity**, though the hyper-transmissible delta is now more dominant.) "Both trials are ongoing," a Pfizer/BioNTech spokesperson told me.

Likewise, Moderna recently **announced** that it's testing reformulated vaccine candidates to target the beta and delta variants. The company has already started testing three out of its four candidates in a Phase 2/3 trial, which will determine their efficacy. It plans to start testing the fourth — a combo candidate that targets both beta and delta — in the next few weeks. "The Company's strategy is to develop booster vaccines against current variants of concern and against potential future variants of concern," Moderna **explained** in a news release for investors.

While progress on delta-specific boosters is a good thing, it does raise the question of

We use cookies and other tracking technologies to improve your browsing experience on our site, show personalized content and targeted ads, analyze site traffic, and understand where our audiences come from. To learn more or opt-out, read our [Cookie Policy](#). Please also read our [Privacy Notice](#) and [Terms of Use](#), which became effective December 20, 2019.

By choosing **I Accept**, you consent to our use of cookies and other tracking technologies.

I Accept

Antibodies are a signal that the human immune system can recognize and fight a virus, and while they're not the only measure of immunity, robust antibody counts are a great sign.

Results like these are part of why some experts aren't sure we need delta-specific vaccines. As Florian Krammer, a Mount Sinai virologist, said in an **interview with physician and researcher Eric Topol**:

Trials of mRNA vaccines against the beta variant are being done in people who got the regular mRNA vaccine first. Some of these studies also have arms in which the same vaccine was given a third time, and it looks like that gives you as much protection or as-good antibody levels against beta, but also against delta, as the switched vaccine. So right now, it's not clear whether there is even a benefit in changing the vaccine strain.

Dan Barouch, an immunologist at Beth Israel Deaconess Medical Center in Boston, **reasons that** delta-specific vaccines probably won't be that much better than the original vaccines because delta's spike protein is pretty similar to the ancestral coronavirus's in terms of its look and shape. That means the antibodies created by the original formulation of the vaccine, if we're given third shots of it, should work well to attack the virus.

Angela Rasmussen, a virologist at the University of Saskatchewan, agrees. "We don't need delta-specific vaccines," she told me. Even for the huge swathes of the world that haven't gotten any shots yet, and that could theoretically take a delta-specific vaccine as their first dose, she's not sure it's worth developing that tailored vaccine. "It would take a while to get through regulatory approval and manufacture and vaccines are needed *now*."

RELATED

We use cookies and other tracking technologies to improve your browsing experience on our site, show personalized content and targeted ads, analyze site traffic, and understand where our audiences come from. To learn more or opt-out, read our **[Cookie Policy](#)**. Please also read our **[Privacy Notice](#)** and **[Terms of Use](#)**, which became effective December 20, 2019.

By choosing **I Accept**, you consent to our use of cookies and other tracking technologies.

I Accept

said. “You’re going to have, one, the delay of manufacturing and having to allocate specific manufacturing plants for that purpose, and two, the FDA review that would go into it, so that creates a delay. I don’t think that trade-off makes sense for the delta variant.”

Was the promise of mRNA vaccines for Covid-19 overhyped?

It’s extremely helpful that mRNA vaccines are faster to make than traditional vaccines, and that the clinical trial process for tweaked mRNA vaccines is shorter than for the original vaccines. But between testing, manufacturing, and regulatory approval, retooling a vaccine still takes months.

Does that mean the initial optimism about mRNAs’ adaptability was overstated?

“I think the optimism is great outside of urgent Covid times — this [mRNA technology] could make vaccines easier to develop long term. For seasonal flu, where there’s already a process for rapidly evaluating reformulated vaccines, great!” Rasmussen said. “But in the urgent situation we face now with Covid, the regulatory process still takes time that right now we don’t have.”

In other words, an incredible technology (and make no mistake, mRNA is an incredible, world-changing technology) is all well and good — but it can only be used to its full potential in a scenario where regulatory pathways allow tweaked vaccines to be evaluated efficiently.

Even though Gounder doesn’t think we need a delta-specific vaccine, “It makes sense for [the drugmakers] to move forward on this even if that particular reformulation does not go into widespread use,” she said. “It really helps them figure out what may be the issues with updated vaccines,” in terms of manufacturing hiccups and regulatory pathways.

We use cookies and other tracking technologies to improve your browsing experience on our site, show personalized content and targeted ads, analyze site traffic, and understand where our audiences come from. To learn more or opt-out, read our [Cookie Policy](#). Please also read our [Privacy Notice](#) and [Terms of Use](#), which became effective December 20, 2019.

By choosing **I Accept**, you consent to our use of cookies and other tracking technologies.

I Accept

There's one other reason why making a reformulated vaccine to fight delta might have gotten off to a slow start, according to Benjamin Linas, an epidemiologist at Boston University. There are lots of unused doses of the original vaccines, which public health officials and drugmakers may have feared would go to waste if people decide they only want the "new and improved" version.

"I don't know what message it would give if [Pfizer or Moderna] said, 'Oh we have a specially engineered vaccine for delta.' Would that generate concern that the original vaccine didn't work? Which is absolutely not true," Linas **said**. The vaccines are still really effective against delta, especially at preventing severe illness and hospitalization.

It's possible that this winter, delta-specific vaccines may be on offer. But that does *not* mean there's anything wrong with the original vaccines — and those who are eligible for boosters now and have waited at least six months since their second shot would do well to remember that the original vaccines are working perfectly well as a third dose.

"This is especially true for high-risk people," Rasmussen said. "They should get the third shot now rather than wait."

The FDA and CDC have **endorsed** giving booster shots to some Americans who got the Pfizer/BioNTech vaccine — namely, people over age 65 and nursing home residents, people who have **medical conditions** that raise the risk of severe Covid-19, and people whose job puts them at higher risk of contracting the virus.

Will you support Vox's explanatory journalism?

We use cookies and other tracking technologies to improve your browsing experience on our site, show personalized content and targeted ads, analyze site traffic, and understand where our audiences come from. To learn more or opt-out, read our **[Cookie Policy](#)**. Please also read our **[Privacy Notice](#)** and **[Terms of Use](#)**, which became effective December 20, 2019.

By choosing **I Accept**, you consent to our use of cookies and other tracking technologies.

I Accept

Email (required)

SUBSCRIBE

By signing up, you agree to our [Privacy Notice](#) and European users agree to the data transfer policy. For more newsletters, check out our [newsletters page](#).

We use cookies and other tracking technologies to improve your browsing experience on our site, show personalized content and targeted ads, analyze site traffic, and understand where our audiences come from. To learn more or opt-out, read our [Cookie Policy](#). Please also read our [Privacy Notice](#) and [Terms of Use](#), which became effective December 20, 2019.

By choosing **I Accept**, you consent to our use of cookies and other tracking technologies.

I Accept