COVID shots still work but researchers hunt new improvements

April 24 2022, by Lauran Neergaard

A health worker administers a dose of COVID-19 vaccine during a vaccination clinic in Reading, Pa. COVID-19 vaccinations are at a critical juncture as companies test whether new approaches like combination shots or nasal drops can keep up with a mutating coronavirus — even though it's not clear if any change is needed. Credit: AP Photo/Matt Rourke, File

COVID-19 vaccinations are at a critical juncture as companies test whether new approaches like combination shots or nasal drops can keep up with a mutating coronavirus—even though it's not clear if changes are needed.

Already there's public confusion about who should get a second booster now and who can wait. There's also debate about whether pretty much everyone might need an extra dose in the fall.

"I'm very concerned about booster fatigue" causing a loss of confidence in vaccines that still offer very strong protection against COVID-19's worst outcomes, said Dr. Beth Bell of the University of Washington, an adviser to the U.S. Centers for Disease Control and Prevention.

Despite success in preventing serious illness and death, there's growing pressure to develop vaccines better at fending off milder infections, too—as well as options to counter scary variants.

"We go through a fire drill it seems like every quarter, every three months or so" when another mutant causes frantic tests to determine if the shots are holding, Pfizer vaccine chief Kathrin Jansen told a recent meeting of the New York Academy of Sciences.

Yet seeking improvements for the next round of vaccinations may seem like a luxury for U.S. families anxious to protect their littlest children—kids under 5 who are not yet eligible for a shot. Moderna's Dr. Jacqueline Miller told The Associated Press that its application to give two low-dose shots to the youngest children would be submitted to the Food and Drug Administration "fairly soon." Pfizer hasn't yet reported data on a third dose of its extra-small shot for tots, after two didn't prove strong enough.

COMBINATION SHOTS MAY BE NEXT

The original COVID-19 vaccines remain strongly protective against serious illness, hospitalization and death, especially after a booster dose, even against the most contagious variants.

Updating the vaccine recipe to match the latest variants is risky, because the next mutant could be completely unrelated. So companies are taking a cue from the flu vaccine, which offers protection against three or four different strains in one shot every year.

Moderna and Pfizer are testing 2-in-1 COVID-19 protection that they hope to offer this fall. Each "bivalent" shot would mix the original, proven vaccine with an omicron-targeted version.

Moderna has a hint the approach could work. It tested a combo shot that targeted the original version of the virus and an earlier variant named beta—and found vaccine recipients developed modest levels of antibodies capable of fighting not just beta but also newer mutants like omicron. Moderna now is testing its omicron-targeted bivalent candidate.

But there's a looming deadline. FDA's Dr. Doran Fink said if any updated shots are to be given in the fall, the agency would have to decide on a recipe change by early summer.

DON'T EXPECT BOOSTERS EVERY FEW MONTHS

For the average person, two doses of the Pfizer or Moderna vaccine plus one booster—a total of three shots—"gets you set up" and ready for what may become an annual booster, said Dr. David Kimberlin, a CDC adviser from the University of Alabama at Birmingham.

After that first booster, CDC data suggests an additional dose offers most people an incremental, temporary benefit.

Why the emphasis on three shots? Vaccination triggers development of antibodies that can fend off coronavirus infection but naturally wane over time. The next line of defense: Memory cells that jump into action to make new virus-fighters if an infection sneaks in. Rockefeller University researchers found those memory cells become more potent and able to target more diverse versions of the virus after the third shot.

Even if someone who's vaccinated gets a mild infection, thanks to those memory cells "there's still plenty of time to protect you against severe illness," said Dr. Paul Offit of the Children's Hospital of Philadelphia.

But some people—those with severely weakened immune systems—need more doses up-front for a better chance at protection.

And Americans 50 and older are being offered a second booster, following similar decisions by Israel and other countries that offer the extra shot to give older people a little more protection.

The CDC is developing advice to help those eligible decide whether to get an extra shot now or wait. Among those who might want a second booster sooner are the elderly, people with health problems that make them particularly vulnerable, or who are at high risk of exposure from work or travel.

COULD NASAL VACCINES BLOCK INFECTION?

It's hard for a shot in the arm to form lots of virus-fighting antibodies inside the nose where the coronavirus latches on. But a nasal vaccine might offer a new strategy to prevent infections that disrupt people's everyday lives even if they're mild.

"When I think about what would make me get a second booster, I actually would want to prevent infection," said Dr. Grace Lee of

Stanford University, who chairs CDC's immunization advisory committee. "I think we need to do better."

Nasal vaccines are tricky to develop and it's not clear how quickly any could become available. But several are in clinical trials globally. One in late-stage testing, manufactured by India's Bharat Biotech, uses a chimpanzee cold virus to deliver a harmless copy of the coronavirus spike protein to the lining of the nose.

"I certainly do not want to abandon the success we have had" with COVID-19 shots, said Dr. Michael Diamond of Washington University in St. Louis, who helped create the candidate that's now licensed to Bharat.

But "we're going to have a difficult time stopping transmission with the current systemic vaccines," Diamond added. "We have all learned that."