Answers to 3 big questions on new coronavirus variants, vaccines

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Vaccines going into people’s arms now—and ones that could soon gain emergency use authorization in the U.S.—were designed to help our bodies fight off SARS-CoV-2’s D614G variant that emerged from Europe at the pandemic’s onset.

The big question now: Will these vaccines protect us against new variants such as B.1.1.7, first identified in the United Kingdom, B.1.351 that emerged in South Africa, as well as any others that may arrive on the scene?

“As long as these vaccines can prevent against moderate to severe disease, I think we're good. And so far, that's where it stands,” Paul Offit, MD, director of the Vaccine Education Center and an attending physician in the infectious diseases division at Children’s Hospital of Philadelphia, told viewers of a recent episode of the “AMA COVID-19 Update.”

But, he said, we need to be prepared for the fact that highly mutated variants of SARS-CoV-2 could, at some point, completely escape vaccine recognition.

“We're going to need to have second-generation vaccines,” he said.

The AMA recognizes the critical importance of scientific integrity, transparency and public trust in the fight to contain the global spread of COVID-19 and plan for the authorization, distribution and administration of COVID-19 vaccines. Stay updated with the AMA on COVID-19 and vaccine development.

How long would a new vaccine take?
Reformulating vaccines to provide protection against variants is fairly easy, said Dr. Offit, the co-inventor of the rotavirus vaccine, RotaTeq.

For the messenger RNA (mRNA) vaccines from Pfizer-BioNTech and Moderna, or for the so-called replication defective, simian or human adenovirus vaccines that are made by Johnson & Johnson (J&J) and AstraZeneca, a different gene is reinserted. It would probably take a week to accomplish that and create, essentially, a multivalent vaccine, Dr. Offit said.

“That's easy,” he said. “The hard part—the really hard part as we're learning—is mass production, mass distribution and mass administration. That's going to be just as hard as it's been now. … As they say in the vaccine world, the hardest part of making vaccines is making vaccines.”

Is one vaccine preferable to another?

Recently, the mainstream press has focused on how protective different vaccines are against mild, moderate and severe disease, playing up how the Pfizer and Moderna vaccines appear to have shown more protection for mild disease than the J&J vaccine that could gain emergency use authorization (EUA) in the U.S. soon.

But Dr. Offit said that news media reporting has overlooked or downplayed the fact that data J&J has released so far shows their vaccine candidate appears to be highly effective at preventing severe disease. All the cases of severe disease and fatal disease in the trial were in the placebo group.

“If you tell somebody, ‘Look, I have a vaccine that's going to keep you out of the hospital, keep you out of the ICU and keep you out of the morgue, do you want to get this one?’ Yes. I would think a lot of people would see this as a desirable product,” he said.

With vaccine supply so tight now, protecting against mild disease is a luxury, he said.

How long will protection last?

Dr. Offit believes the vaccines for SARS-CoV-2 could be effective for a few years.

“Not decades, probably, but certainly for two, three years. I think that's possible,” he said. “So, the only reason to give another dose the following year is, for like flu, that the viruses have mutated so much that your previous immunization does not protect you.”

He said a scenario like the annual flu shot would surprise him.
“We’re certainly are not there yet,” Dr. Offit said. “Look for those people who’ve been immunized, who are then still getting admitted to the hospital with severe disease. When you start to see that happening, that's when you worry. But for right now, for all the fear of these variants, that hasn't happened yet. It may well happen, but it hasn't happened yet.”