Pandemic game-changer? How older vaccine tech fills global gaps

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Sara Berg, MS
Senior News Writer

Vaccines that protect against COVID-19 are needed for global health. But with 3 billion people needing 6–9 billion SARS-CoV-2 vaccine doses in the low- and middle-income countries in Africa, Asia and Latin America, where do those doses come from if there is not a sufficient amount of mRNA or adenovirus-vectored vaccines?

That is where a new COVID-19 vaccine—Corbevax and others like it—from AMA member Peter Hotez, MD, PhD, could help level the playing field.

“Our Texas Children’s Hospital Center for Vaccine Development is co-headed by myself and my science partner for the last 20 years, Maria Elena Bottazzi, PhD. And we’ve been mainly focusing on parasitic disease vaccines for the poor, but also began working on coronavirus vaccines because they were orphaned as well, and developing vaccines for SARS and MERS,” Dr. Hotez said during a recent episode of the “AMA COVID-19 Update” about his new COVID-19 vaccine and how it fits into the global pandemic response.

“That's how we showed that the spike protein is a target of vaccination—how to deliver the spike protein induced virus-neutralizing antibody,” said Dr. Hotez, who received the AMA Scientific Achievement Award for his work on promoting vaccines and combating misinformation. “Then when the COVID-19 sequence came along about two years ago … we realized that we could pivot to a COVID-19 vaccine, developed it and used our experience over the previous decade to hit the ground running.”

Learn with the AMA how previous research paved the way for COVID-19 vaccines.
Filling a global equity gap

The difference with Covax, which received emergency use authorization in India in December, is “it employs a technology that’s been around several decades because it’s a similar yeast-fermentation technology to make a vegan vaccine—there are no human cells, animal cells or animal protein—that’s used to make the recombinant hepatitis B vaccine,” said Dr. Hotez. “The great thing is, that technology is in place locally and by vaccine producers in Bangladesh, Vietnam, Thailand and you name it.”

“If you really want to make a vaccine for global health COVID-19, that’s the technology to use,” Dr. Hotez said, noting that “we’ve licensed it and are helping the codevelopment to four vaccine producers in India (Biological E), Indonesia (BioFarma), Bangladesh (Incepta) and Southern Africa (ImmunityBio).”

“Biological E, which is one of India’s big vaccine producers, is the furthest along,” said Dr. Hotez, dean of the National School of Tropical Medicine, and professor of pediatrics and molecular virology and microbiology at Baylor College of Medicine in Houston. “They’ve got 250 million doses already made with plans to make 140 million doses a month until they get to a billion and they could go on from there.”

There are now talks with “the World Health Organization, for emergency use listing, and then Indonesia and others will follow,” he said, adding that it is “pretty exciting to help make a difference in filling this global equity gap.”

Vaccinate the world, prevent variants

With the more old-fashioned approach to vaccine development taken by Dr. Hotez and his colleagues, “we can hit the ground running, accelerating a vaccine for the world, whereas it’s going to take years to learn how to scale mRNA,” he said, noting that “Delta rose out of the unvaccinated population in India at the beginning of 2021.”

Then the Omicron variant came from “an unvaccinated population out of southern Africa the end of last year,” he said. “Mother nature’s not being coy. She’s telling us what she’s going to do.”

“As long as we fail to vaccinate the global south—meaning the low- and middle-income countries of the world—she’s going to continue to throw terrible variants of concern at us until we finally figure out how to vaccinate the world,” Dr. Hotez said.

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