U.S. Vaccine Program Now Flush With Cash, but Short on Key Details

A $5 billion federal program aims to make better Covid vaccines. But vaccine makers are confused by murky regulatory guidance.

By Benjamin Mueller, Noah Weiland and Carl Zimmer

June 26, 2023

Efforts to develop the next generation of Covid vaccines are running up against bureaucratic hassles and regulatory uncertainty, scientists say, obstacles that could make it harder to curb the spread of the coronavirus and arm the United States against future pandemics.

The Biden administration, after months of delay, has now addressed at least a shortfall in funding, hurrying to issue the first major grants from a $5 billion program to expedite a new class of more potent and durable inoculations.

But the program is facing the blunt reality that vaccine development, after being shifted into high gear early in the pandemic, has returned to its slower and more customary pace.

Experiments on a promising nasal vaccine licensed from Yale University have slowed as researchers have tried for nearly a year to obtain older shots from Pfizer-BioNTech and Moderna to use in the studies. The federal government's original purchase agreements for those shots prevent doses from being used for research purposes without the companies' approval, despite tens of millions of unused shots being wasted in recent months.

In Pennsylvania, a company developing an inhaled vaccine related to one already in wide use in India said that it tried in vain to get clarity about whether it was eligible for American government funding. The vaccine, the company said, may not have gone through advanced enough testing to qualify for the new pot of U.S. funding.

And in academic laboratories and start-up offices across the country, vaccine makers have been left in the dark about whether clinical trials that the Biden administration funds will be large and sophisticated enough to win over regulators who are still ironing out what they will require for clearance.

Federal officials, some of whom have become concerned about the leadership of the next-generation vaccine program, acknowledged that key questions remain about how the program will operate and how quickly it can deliver. Although some Biden administration officials hope to roll out new vaccine technology by fall 2024, many scientists believe doses are at least several years away.

"There's not the money, there's not the infrastructure, there's not the support," John Moore, a virologist at Weill Cornell Medicine, said of the push for improved vaccines. "So I'm not expecting any next-generation major things in the near future."

A nasal spray vaccine candidate from Meissa Vaccines, which is based in California.
Meissa Vaccines

The Pfizer and Moderna vaccines robustly prevent severe disease. But they have failed to stop variants like Omicron from circulating, which has kept more Americans than usual out of work and sickened some with long Covid. And they have not extinguished the danger for some vaccinated Americans, especially older people. Hundreds nationally are dying from Covid each week.

While vaccine technology from 2020 dominates the American market, large nations like India and China have rolled out newer inoculations. If those vaccines perform better, they could fortify the United States against deadly future waves, much as a second generation of polio shots decades ago helped eliminate that disease from the country.

But newer Covid vaccines, which rely on less certain technology, are no sure thing. Some are sprayed into the nose or mouth to arouse immune defenses where the virus first gains entry, possibly preventing people from becoming infected. Others are designed to protect against not only variants of this virus, but also other types of coronaviruses, making them a crucial tool in a future pandemic.

With large pharmaceutical companies mostly sitting on the sidelines and private investors wary of the market for next-generation vaccines, small biotechnology companies have struggled to advance inoculations through the arduous and expensive clinical testing process.

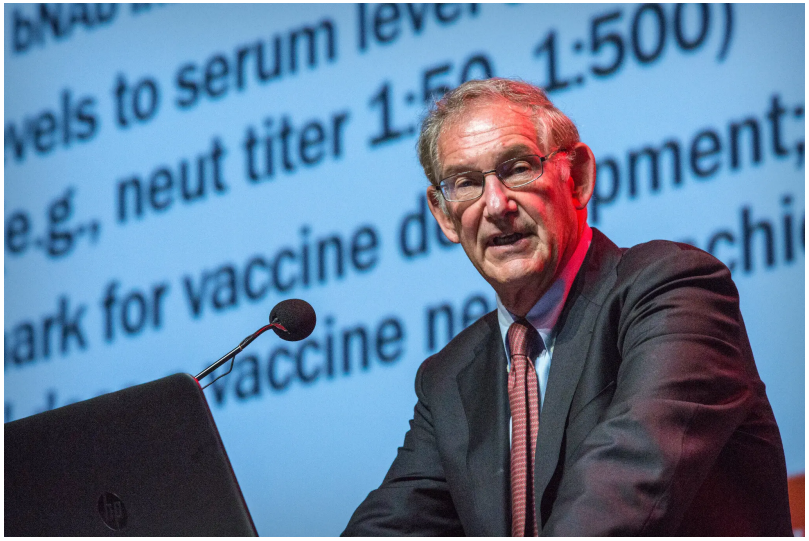
“Covid is still around, and the scientist part of me is thinking this is important and we should do it,” said Biao He, the chief executive of CyanVac, referring to the company’s nasal Covid vaccine, one of the few to have completed enough advanced testing to qualify for extensive government funding. But when he meets with investors about his company’s various products, he said, “The capitalist part of me is saying, ‘Maybe we shouldn’t mention it.’”

Given the difficulties, vaccine makers have hurried to line up for the new federal money: More than 70 companies responded to the government’s recent call for applicants, a Department of Health and Human Services spokesman said.

Federal health officials aim to finalize a handful of vaccine-related awards this summer and a dozen or more by early 2024, one official said.

But key features of the initiative known as Project NextGen, including who will run it, have created divisions within the administration.

White House officials, hoping for a leader in the mold of the former pharmaceutical executive who oversaw a 2020 program to accelerate vaccine development, vetted candidates from outside the government and identified three finalists: Dr. Larry Corey, an immunologist at the Fred Hutchinson Cancer Center; Dr. Michelle McMurry-Heath, the former chief executive of the Biotechnology Innovation Organization; and Dr. David A. Kessler, the former chief science officer for the Biden administration's Covid response, according to people familiar with the search.



Dr. Larry Corey directs a government-funded network of academic medical centers with experience testing H.I.V. and Covid vaccines. Fred Hutch News Service

But the health department has resisted an outside hire. "H.H.S. is the one that has to execute and deliver," Xavier Becerra, the agency's director, said this month at a Politico event. Some senior federal officials are concerned about whether the agency can operate with enough urgency, two federal officials said.

Dawn O'Connell, the health department's assistant secretary for preparedness and response, defended plans to run the program internally through a health agency known as the Biomedical Advanced Research and Development Authority, or BARDA. "We have the expertise within BARDA to move these products toward the finish line," she said.

Scientists and health officials acknowledge that Project NextGen will struggle to measure up to its 2020 predecessor, Operation Warp Speed. That $18 billion federal effort, coming amid an onslaught of Covid deaths, hastened vaccine development by helping companies simultaneously test and manufacture shots. It also cleared regulatory hurdles and ensured the government bought the resulting vaccines.

Project NextGen, conceived with Covid deaths at their lowest level, has neither Warp Speed's vast money nor the mandate to purchase shots in bulk.

Still, some experts have questioned whether the new initiative draws on valuable lessons from Warp Speed.

Dr. Corey, for example, noted that the 2020 program gave upstart vaccine makers access to a government-funded network of academic medical centers with experience testing H.I.V. vaccines, which helped recruit a more diverse group of tens of thousands of volunteers.

But that expertise will not be available for next-generation inoculations. Instead, vaccine makers will have to pay private companies to run their trials.

“The devil is in the details,” said Dr. Corey, who directs the clinical trial network. “To pull it off, the H.I.V. infrastructure we created and used in Warp Speed, and the trials I planned and conducted — they need to be brought back into the system.”

Last month, the Biden administration asked vaccine makers to propose 10,000-person trials that would compare new inoculations with currently available booster shots. If the new vaccines are effective, they could attract the private funding necessary for additional testing and manufacturing.

With strong results from that type of trial, “the calculus changes for you and your program,” said Marty Moore, the chief scientific officer of Meissa Vaccines, whose nasal spray is a likely candidate for federal funding.

Still, it is not clear how these proposed trials align with what the Food and Drug Administration might require to authorize new vaccines.

The agency relied on larger trials to clear the first coronavirus shots in 2020. In early conversations about NextGen with the Biden administration, regulators suggested that they may look for a similar level of data from the newer vaccines, two federal health officials said. But details of their position are still being worked out, and regulators are considering approaching candidates in the program on a case-by-case basis, one health official said.

Neil King, right, with Audrey Olshefsky, a doctoral candidate, in the King Lab of the University of Washington. Dr. King has led the development of a Covid-19 vaccine made by SK Bioscience that is authorized in South Korea and Britain. David Ryder/Getty Images

Regulators plan to publish guidance on their standards in the coming months, officials said. “The agency is committed to remaining flexible in its approach to the data,” said Michael Felberbaum, an F.D.A. spokesman.

Regulatory uncertainty has hampered next-generation vaccines for years, said Neil King, a University of Washington biochemist. To protect against new variants, or even other coronaviruses, his team updated its earlier Covid vaccine, which is authorized in South Korea and Britain.

But despite having repeatedly asked the government for guidance, he said, he has not received answers about what U.S. regulators will seek from advanced studies of the new vaccine.

“Everyone is clamoring for clarity,” he said.

The difference between requiring smaller or larger studies could add up to hundreds of millions of dollars, said Dr. Bruce Turner, chief executive of Xanadu Bio, which is developing Yale’s nasal vaccine.

“For a small company,” he said, “it’s really life and death.”

The bulk of NextGen funding is available only to researchers whose vaccines have data from Phase 1 trials and will be ready for advanced studies within six months — a hurdle that many groups have not cleared. The program will also fund earlier-stage trials at the National Institutes of Health to compare less-tested vaccines and figure out how to measure immune responses, said Dr. John Beigel, an N.I.H. associate director for clinical research.

But companies with early-stage vaccines expressed confusion about whether they qualify.

“A lot of companies won’t even be eligible,” said Shankar Musunuri, the chief executive of Ocugen, the Pennsylvania company with the inhaled vaccine. “They could have had a more structured approach to this.”

Bureaucratic problems have tripped up vaccine developers such as Xanadu Bio, which cannot use Pfizer or Moderna vaccines for its experiments. The restriction stems from a provision in the federal purchase agreements that is generally meant to protect companies from the risk of a poorly run experiment hurting their product, though it can also help insulate firms from unflattering results.

Health officials said that companies could obtain those doses once the shots become available on the commercial market, a change not expected until late summer or fall.

Benjamin Mueller is a health and science reporter. Previously, he covered the coronavirus pandemic as a correspondent in London and the police in New York. More about Benjamin Mueller

Noah Weiland is a health reporter in the Washington bureau. He was part of a team that won a Pulitzer Prize for its coverage of Covid-19 in 2020. More about Noah Weiland

Carl Zimmer writes the “Origins” column. He is the author of fourteen books, including “Life’s Edge: The Search For What It Means To Be Alive.” More about Carl Zimmer

A version of this article appears in print on , Section A, Page 12 of the New York edition with the headline: U.S. Vaccine Program Flush With Cash, but Short on Key Details