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YOUR HEALTH

One Idea for Speeding a Coronavirus Vaccine: Deliberately Infecting People

Debate is rising among scientists about whether a so-called human challenge trial is worth the risk



A big part of preparing for a human challenge trial is developing a strain of the virus that is safe but will infect most participants. Here is a version of influenza that researchers used in November to infect participants with the ultimate goal of creating a universal flu vaccine.

PHOTO: ERIC KAYNE FOR THE WALL STREET JOURNAL



By

Sumathi Reddy

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It's a controversial idea: Intentionally infect people with the virus that causes Covid-19 to test the effectiveness of a potential vaccine.

The approach is called a human challenge trial, and it's not the usual way a vaccine is tested. More commonly, researchers track thousands of people, some of whom receive a vaccine, and others a placebo, and then see who becomes infected in the natural course of their lives. It's a

slower process, but poses fewer risks than deliberately infecting people after they've received a vaccine.

But some scientists now argue the risks of such a challenge trial are worth taking if it could potentially speed the development of a vaccine. Three groups of health experts have recently published articles advocating for the idea. And the World Health Organization last week published a document outlining criteria for the "ethical acceptability" of a Covid-19 human challenge study.

Vaccines usually take decades to manufacture but experts are looking for ways to shorten the entire process with Covid-19 to perhaps 12 to 18 months. There's no guarantee they will be able to do so. It's unclear how much a challenge trial could potentially accelerate the timetable. Experts say the trial itself might take only a couple of months, but creating a version of the virus to infect people with—a crucial part of any challenge—would likely take at least six months.



Kathleen Neuzil is principal investigator for the influenza study and director of the Center for Vaccine Development and Global Health at the University of Maryland School of Medicine.

PHOTO: ERIC KAYNE FOR THE WALL STREET JOURNAL

"We have to look at ways that are not typical vaccine development," says Stanley Plotkin, a professor emeritus of pediatrics at the University of Pennsylvania and vaccine expert who co-authored an article in the journal Vaccine earlier this month advocating for a human challenge trial.

"I think that a human challenge could contribute greatly and unless we start preparing for it now it will not be available when we need it," added Dr. Plotkin, who consults with vaccine manufacturers. "If problems don't arise along the way, I think it would be reasonable to hope that one could do a human challenge trial in about four months."

Dr. Plotkin says the immediate objective isn't a vaccine for the general public, but rather to expedite approval of a vaccine for emergency use in high-risk groups. Experts agree that even if a challenge trial were used to accelerate a vaccine, a broader trial would still ultimately need to take place.

Several potential coronavirus vaccines have entered human testing. But none have announced that they will be doing human challenge testing.

Any human challenge would be done in a highly controlled setting. When used in vaccine and drug development previously, challenge trials have tended to be done with diseases whose behavior and effects are better understood than Covid-19. Researchers have done challenges with the flu, for instance, to try to develop a better, longer-lasting vaccine. Influenza is a well-studied, well-known virus, and scientists are confident they can give a precise amount of it to young, healthy volunteers without killing them.

Challenge trials are also considered when traditional vaccine development isn't possible. In 2017 the National Institutes of Health recommended against a human challenge trial for a Zika virus based on ethical concerns. But now that traditional vaccine trials would be difficult in part because Zika outbreaks are so unpredictable, researchers are preparing for a human challenge trial, though one hasn't been formally approved.

With the coronavirus, there are many risk factors and uncertainties. "You're starting with this whole new virus that we don't know a lot about," says Kathleen Neuzil, director of the Center for Vaccine Development and Global Health at the University of Maryland School of Medicine. She's also the principal investigator of a government-funded influenza human challenge study that launched last year.

Dr. Neuzil doesn't think a human challenge trial would speed up the vaccine development process. That's partly because of the time it could take to create a version of the virus to be used in the testing. That strain has to be manufactured according to government standards and tested to find the right dose.

David Magnus, director of the Stanford Center for Biomedical Ethics at Stanford University, says another problem of doing a Covid-19 human challenge trial is that there are no effective treatments available if a volunteer becomes sick. Most other human challenge trials are done with diseases where there is very low risk of serious illness and there are good treatments when people become sick. "We can't even get adequate consent right now because we can't really tell people what the risks are or if immunity is conferred," he says.



Josh Morrison started a website where people can express interest in participating in a future human challenge trial for Covid-19.

PHOTO: JOSH MORRISON

Still, some people say they would be willing to volunteer. Josh Morrison, a 34 year old in New York City, has started a group called 1Day Sooner where people can express interest in participating in a future challenge trial for Covid-19.

So far around 15,000 people from more than 100 countries have signed up, including him, despite the fact that he donated a kidney in 2011.

“Obviously I would prefer not to get Covid-19,” he says. “But I also felt like this was a chance to be part of saving thousands or even hundreds of thousands of lives. And I felt so powerless at the time that being able to take action and do something meaningful was a strong motivator to me.”

SHARE YOUR THOUGHTS

Would you be willing to take part in a Covid-19 vaccine “challenge”? Why or why not? Join the discussion below.

Conor Barnes, a 27-year-old library technician in British Columbia, Canada, has also expressed interest on the website. He says he weighed the risks and benefits for a week. “There isn’t much else I can do to help,” he says. “It’s a big decision because it is a risk but just looking at the

numbers of people who die every day, the idea of contributing to that reduction I think is huge," he said.

In the U.S., the Food and Drug Administration regulates vaccines. "Because these [challenge] studies involve exposing volunteers to the virus, the studies raise a variety of potential scientific, feasibility and ethical issues. The FDA will work with those who are interested in conducting human challenge trials to help them evaluate these issues," says an FDA spokesman.

A company in London called hVIVO that specializes in human challenge trials is "very actively looking into how we could build a Covid-19 challenge study to help speed up the world wide development of an effective vaccine," said Cathal Friel, executive chairman of Open Orphan, a clinical trials company that acquired hVIVO earlier this year. He says at least 10 pharmaceutical companies have already expressed interest in their potentially conducting a challenge trial of their vaccine candidates.

Seema Shah, a bioethicist at Lurie Children's Hospital of Chicago, is first author of a study published recently in the journal Science which concluded that there are two big questions that need to be answered before launching a human challenge study.

First, it needs to be determined that a trial would lead to some benefit, be it a better vaccine or treatment or a shortened timetable. Second, the risks must be minimized. "Right now there are still young, healthy people who are having strokes or having serious complications," says Ms. Shah, who is also part of the WHO's working group.

Still, because it would take several months to set up a challenge study, the authors concluded that it's a smart idea to get ready for the possibility now. "It's worth preparing to do one and laying the groundwork while waiting to make that final decision when we have more information," she says.

Write to Sumathi Reddy at sumathi.reddy@wsj.com

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