COMMENTARY

A Coronavirus Vaccine: Faster, Please

Developing an inoculation is a slow and uncertain process. There are ways to make it more efficient.

By Henry I. Miller

Covid-19 cases, hospitalizations and deaths are leveling off in hot spots like Seattle and New York. New infections should soon begin to decline, and many parts of the country will be able to start a phased return to “normal.” Yet without a vaccine, normality will look very different than it did before the pandemic.

The medical community and the public are hungry for news about vaccines, but accounts of progress have been exaggerated. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases and senior member of the White House coronavirus task force, has put into perspective the overly optimistic predictions of a vaccine available within the target of 12 to 18 months: “A vaccine that you make and start testing in a year is not a vaccine that’s deployable.” There is a world of difference between testing a vaccine candidate and millions of people lining up for a shot.
Clearly, there is a sense of urgency. What, then, is standing in the way of the rapid deployment of a vaccine? For one, unproven technologies—which are being used by virtually all of the Covid-19 vaccine developers—present significant safety concerns. And once researchers have a vaccine candidate, the risk-averse regulators at the Food and Drug Administration get involved. The regulatory process can be sped up, but corners can’t be cut without sacrificing confidence about the safety and efficacy of the product.

The regulatory bar is very high for vaccines that would be administered to healthy people. Before approval, the first rotavirus vaccine (RotatEeq) was tested on 72,000 healthy infants, the first human papillomavirus vaccine (Gardasil) on more than 24,000 people, and the newest shingles vaccine (Shingrix) on about 29,000. Planning and executing clinical trials of that magnitude is a major undertaking. Researchers need to recruit medical practitioners and research institutions, with competition among some 70 developers of Covid-19 vaccines. Developers have to make sufficient quantities of the vaccine under conditions that meet the FDA’s Current Good Manufacturing Practices standards for purity and potency. And all the data must be accumulated, organized and analyzed, first by the sponsor of the vaccine, then by regulators.

Another complication is that to demonstrate efficacy—the ability of the vaccine to prevent the coronavirus infection—trials need to be done in places where relatively large numbers of people are infected. This is important to attain sufficient statistical power to show a difference between those given the vaccine and the placebo groups.

Finally, there’s no guarantee that any of the vaccines in development will work. Of vaccine candidates that begin clinical trials, only about 16% are ultimately approved. Scientists have tried unsuccessfully for decades to develop a vaccine to prevent HIV/AIDS and a “universal” flu vaccine that wouldn’t need to be reformulated and readministered every year. All have been duds.

Covid-19 is a genuine emergency. Drug and biotech companies and academic institutions are doing their part, and regulators need to, as well. Having been a research virologist who spent 15 years at the FDA as the agency’s “biotechnology czar,” I have some suggestions:

• The FDA should allow developers to perform the more advanced preclinical (animal) studies at the same time as Phase 1 clinical trials, which are performed in a small number of healthy subjects.

• Lower to 10 days the usual 30-day waiting period from the time the application is submitted to the FDA to the start of the Phase 1 trials.
• In collaboration with experienced vaccine developers, the FDA should publish a template “master protocol” for streamlined Covid-19 vaccine development. Trials should have an “adaptive” design: If one vaccine candidate is found not to work, investigators can quickly move on to testing the next most promising one without delay.

• “Unblind”—that is, review—the results early in the clinical trials so researchers can be aware of obvious positive or negative findings sooner.

• Set up a process for regularly sharing data and other information between the sponsor and the FDA via virtual meetings.

• Allow a “rolling” Biologics License Application—the official request to the FDA for approval—so that evaluation of parts of the application can begin when each is ready, instead of submitting all at once.

• The FDA should issue “accelerated approvals” after testing in only limited populations. Additional subgroups—children, pregnant women, etc.—can be tested after approval. The accelerated approvals should be granted before the duration of postvaccination immunity has been ascertained. More-comprehensive trials can then confirm safety, efficacy and the length of time that immunity lasts.

• Establish reciprocity of approvals between the FDA and trusted counterparts in certain foreign countries (Australia, Canada, New Zealand, Japan, the Scandinavian countries and the European Medicines Agency), so that if one of them approves a vaccine, it is automatically approved in the other countries.

We can’t afford miscommunication or bureaucratic foot-dragging—or, for that matter, excessive haste. To avoid all that, regulators and their political masters must work quickly and cleverly while respecting scientific integrity.

Dr. Miller, a physician and molecular biologist, is a senior fellow at the Pacific Research Institute. He has worked in research virology and was founding director of the FDA’s Office of Biotechnology.