Coronavirus

Strong protection offered

Tweaked shots aim to fend off variants

NEW YORK, April 13, (AP): Dozens of Americans are rolling up their sleeves for a third dose of COVID-19 vaccine — this time, shots tweaked to guard against a worrisome mutated version of the virus.

Make no mistake: The vaccines currently being rolled out across the US offer strong protection. But new studies of experimental updates to the Moderna and Pfizer vaccines mark a critical first step toward an alternative if the virus eventually outsmarts today's shots.

"We need to be ahead of the virus," said **Dr. Nadine Rouphael** of Emory University, who is helping to lead a study of Moderna's tweaked candidate. "We know what it's like when we're behind."

It's not clear if or when protection would wane enough to require an update but, "realistically we want to turn COVID into a sniffle," she added.

Rouphael

Viruses constantly evolve, and the world is in a race to vaccinate millions and tamp down the coronavirus before even more mutants emerge. More than 119 million Americans have had at least one vaccine dose, and 22% of the population is fully vaccinated, according to the Centers for Disease Control and Prevention. Much of the rest of the world is far behind that pace.

Already an easier-to-spread version found in Britain just months ago has become the most common variant now circulating in the United States, one that's fortunately vaccine-preventable.

But globally, there's concern that first-generation vaccines may offer less protection against a different variant that first emerged in South Africa. All the major vaccine makers are tweaking their recipes in case an update against that so-called B.1.351 virus is needed. Now experimental doses from Moderna and Pfizer are being put to the test.

In suburban Atlanta, Emory asked people who received Moderna's original vaccine a year ago in a first-stage study to also help test the updated shot. Volunteer Cole Smith said returning wasn't a tough decision.

Success

"The earlier one, it was a great success and, you know, millions of people are getting vaccinated now," Smith told The Associated Press. "If we're helping people with the old one, why not volunteer and help people with the new one?"

The study, funded by the National Institutes of Health, isn't just testing Moderna's experimental variant vaccine as a third-shot immune booster. Researchers at Emory and three other medical centers also are enrolling volunteers who haven't yet received any kind of COVID-19 vaccination.

They want to know: Could people be vaccinated just with two doses of the variant vaccine and not the original? Or one dose of each kind? Or even get the original and the variant dose combined into the same injection?

Separately, the Food and Drug Administration has given Pfizer and its German partner BioNTech permission to start similar testing of their own tweaked vaccine. The companies called it part of a proactive strategy to enable rapid deployment of updated vaccines if they're ever needed.

The Moderna and Pfizer vaccines, like the majority of COVID-19 vaccines being used around the world, train the body to recognize the spike protein that is the outer coating of the coronavirus. Those spikes are how the virus latches onto human cells.

Mutations occur whenever any virus makes copies of itself. Usually those mistakes make no difference. But if a lot of changes pile up in the spike protein -- or those changes are in especially key locations -- the mutant might escape an immune system primed to watch for an intruder that looks a bit different.

The good news: It's fairly easy to update the Moderna and Pfizer vaccines. They're made with a piece of genetic code called messenger RNA that tells the body how to make some harmless spike copies that in turn train immune cells. The companies simply swapped out the original vaccine's genetic code with mRNA for the mutated spike protein -- this time, the one from South Africa.

Studies getting underway this month include a few hundred people, very different than the massive testing needed to prove the original shots work. Scientists must make sure the mRNA substitution doesn't trigger different side effects.

On the protection side, they're closely measuring if the updated vaccine prompts the immune system to produce antibodies - which fend off infection - as robustly as the original shots do. Importantly, lab tests also can show if those antibodies recognize not just the variant from South Africa but other, more common virus versions, too.

Some good news: Antibodies aren't the only defense. NIH researchers recently looked at another arm of the immune system, T cells that fight back after infection sets in. Lab tests showed T cells in the blood of people who recovered from COVID-19 long before worrisome variants appeared nonetheless recognized mutations from the South African version. Vaccines trigger T cell production, too, and may be key to preventing the worst outcomes.

Still, no vaccine is 100% effective - even without the mutation threat, occasionally the fully vaccinated will get COVID-19. So how would authorities know an update is needed? A red flag would be a jump in hospitalizations - not just positive tests - among vaccinated people who harbor a new mutant.

"That's when you've crossed the line. That's when you're talking about a second-generation vaccine," said Dr. Paul Offit of Children's Hospital of Philadelphia, a vaccine adviser to the Food and Drug Administration. "We haven't crossed that line yet, but we might."

Also:

THIMPU, Bhutan: When plotted on a graph, the curve of Bhutan's COVID-19 vaccination drive shoots upwards from the very first day, crossing **Israel**, the **United States**, **Bahrain** and other countries known for vaccinating people rapidly.

Those countries took months to reach where they are, painstakingly strengthening their vaccination campaigns in the face of rising coronavirus cases. But the story of **Bhutan**'s vaccination campaign is nearly finished — just 16 days after it began.

The tiny Himalayan kingdom wedged between **India** and **China** has vaccinated nearly 93% of its adult population since March 27. Overall, the country has vaccinated 62% of its 800,000 people.

The rapid rollout of the vaccine puts the tiny nation just behind Seychelles, which has given jabs to 66% of its population of nearly 100,000 people.

Its small population helped Bhutan move fast, but its success has also been attributed to its dedicated citizen volunteers, known as "desuups," and established cold chain storage used during earlier vaccination drives.

Bhutan received its first 150,000 doses of the AstraZeneca vaccine from neighboring India in January, but the shots were distributed beginning in late March to coincide with auspicious dates in Buddhist astrology.

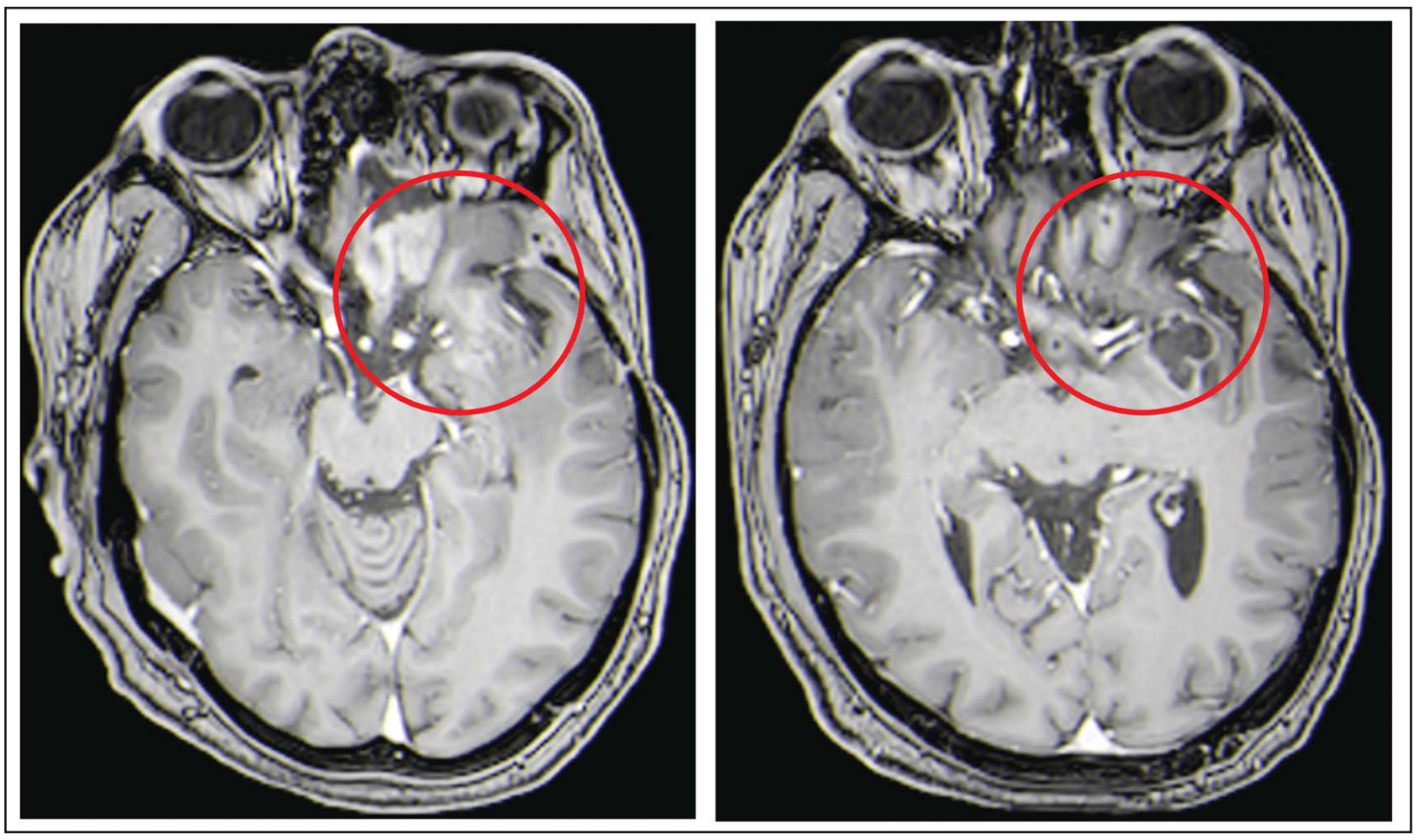
The first dose was administered by and given to a woman born in the Year of the Monkey, accompanied by chants of Buddhist prayers.

"Let this small step of mine today help us all prevail through this illness," the recipient, 30-year-old **Ninda Dema**, was quoted by the country's Kuensel newspaper as saying.

Dr. Pandup Tshering, secretary to the Ministry of Health, said jabs were still being provided to those who could not get vaccinated during the campaign period and that the country had enough doses to cover its entire population.

Bhutan has recorded 910 coronavirus infections and one death since the pandemic began.

Bhutan has a mandatory 21-day quarantine for all people arriving in the country.

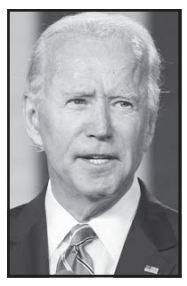


This combination of MRI images provided by the University of Alabama in April 2021 shows scans of a child with a brain tumor, before and after a treatment that involves using viruses to spur an immune system response to the cancerous cells. Lighter-colored areas inside the red circles indicate the tumor size. (AP)

This product image provided by Bristol-Myers Squibb shows their drug Opdivo. On April 10, doctors say that the drug, which helps the immune system fight cancer, gave dramatic results when used with chemotherapy before surgery in patients with operable lung tumors. (AP)

Climate

Brabeck



Biden

GESDA plots future for science: With COVID-19, space exploration and climate change high on many minds, a "do tank" in Geneva bankrolled by Switzerland's government is gearing up to develop long-term projects like a global court for scientific disputes and a Manhattan Project-style effort to rid excess carbon from the atmosphere.

Backers of the Geneva Science and Diplomacy Anticipator want to bridge the Swiss city's image as a hub for conflict resolution with visionary scientific ambitions on big-picture issues, including the future of humanity.

First created in late 2019, GESDA presented its first activity report Tuesday and announced plans for a summit in October bringing together hundreds of United Nations officials, Nobel laureates, academics, diplomats, advocacy group representatives and members of the public.

The initiative's backers include the heads of top Swiss universities and of the world's largest atom smasher, located at European nuclear research organization CERN. They say the coronavirus pandemic has given science a platform unseen for several decades and want to leverage the attention from a public health crisis that has taken nearly 3 million lives and quashed economies to encourage thinking about the interplay among science, politics and society.

Peter Brabeck, a former chairman and CEO of Nestle who was tapped by the Swiss government to lead GESDA, used COVID-19 as an example of how advance planning could help head off future health crises, noting that the mRNA vaccine technology being used now to fight the pandemic has been around a decade.

"We could have perhaps been more prepared for the pandemic than we were today," Brabeck said from GEDSA headquarters at Geneva's Campus Biotech. "Only a scientific breakthrough is not enough. It has to be embedded in a diplomatic framework so that it can be implemented" by governments and companies.

"Technology is advancing at an incredible speed. But the framework around it – diplomacy – is slower than ever, so we have to find a way that we can accelerate the diplomacy also," he said.

The pandemic has featured vaccine nationalism, political squabbles and mutual recriminations between China – where the coronavirus first emerged -- and the United States, which is experiencing the world's most deadly outbreak. The reputation of the World Health Organization also has suffered.

"I would not pretend that GESDA could avoid such a confrontation as it happened in the World Health Organization," Brabeck said. "What GESDA can do is basically to call attention before this thing escalates ... (and) if diplomacy would come in before the fact, a lot of these conflicts might be resolved." Brabeck said the initiative aims to be a "catalyst" and not an operator of any of the projects it looks to develop. (AP)

❑ ❑ ❑

Health

Hope for children with brain tumors

Unusual treatment 'fights' cancer

Immune-boosting drug may help before lung cancer surgery: docs

NEW YORK, April 13, (AP): For decades, a deadly type of childhood cancer has eluded science's best tools. Now doctors have made progress with an unusual treatment: Dripping millions of copies of a virus directly into kids' brains to infect their tumors and spur an immune system attack.

A dozen children treated this way lived more than twice as long as similar patients have in the past, doctors reported Saturday at an American Association for Cancer Research conference and in the New England Journal of Medicine.

Although most of them eventually died of their disease, a few are alive and well several years after treatment -- something virtually unheard of in this situation.

"This is the first step, a critical step," said the study's leader, Dr Gregory Friedman, a childhood cancer specialist at the University of Alabama at Birmingham.

"Our goal is to improve on this," possibly by trying it when patients are first diagnosed or by combining it with other therapies to boost the immune system, he said. The patients in the study were given the experimental approach after they failed other treatments.

The study involved gliomas, which account for 8% to 10% of childhood brain tumors. They're usually treated with surgery, chemotherapy or radiation but they often recur. Once they do, survival averages just under six months.

In such cases, the immune system has lost the ability to recognize and attack the cancer, so scientists have been seeking ways to make the tumor a fresh target. They turned to the herpes virus, which causes cold sores and spurs a strong immune system response. A suburban Philadelphia company called Treovir developed a treatment by genetically modifying the virus so it would infect only cancer cells.

Through tiny tubes inserted in the tumors, doctors gave the altered virus to 12 patients ages 7 to 18 whose cancer had worsened after usual treatments. Half also received one dose of radiation, which is thought to help the virus spread.

Eleven showed evidence in imaging tests or tissue samples that the treatment was working. Median survival was just over a year, more than double what's been seen in the past. As of last June – the cutoff for analyzing these results – four were still alive at least 18 months after treatment.

NEW YORK, April 13, (AP): A drug that helps the immune system fight cancer gave dramatic results when used with chemotherapy before surgery in patients with operable lung tumors, doctors report.

One out of 4 patients given chemo and the Bristol Myers Squibb drug Opdivo had no signs of cancer remaining once they ultimately had surgery, a study of about 350 such people found.

"They open the person up and the tumor's just melted away. It's incredible," said Dr. Roy Herbst, a lung specialist at the Yale Cancer Center.

He had no role in the study, whose results were reported Saturday at an American Association for Cancer Research conference, but has consulted for the maker of Opdivo and other cancer drugs.

Lung cancer kills more than 1.7 million people globally each year. Only about one-third of cases are caught early enough for surgery to help, but that's still about 70,000 patients each year in the United States and the number is growing as screening former or current heavy smokers expands, Herbst said.

Opdivo and similar drugs called checkpoint inhibitors work by removing a cloak that some cancer cells have that hides them from the immune system. They're often used now for various cancers after surgery, and many studies are testing them before surgery as well.

Dr. Patrick Forde at Johns Hopkins University led one such study of about 350 patients with lung cancers that had not spread widely. The cancers were not the type that can be treated with drugs that target certain gene mutations.

Patients were given three rounds of chemo and Opdivo several weeks apart or chemo alone. When they had surgery, no cancer remained in 24% of those given the combo versus 2.2% of those who received just chemo.

Whether the combo treatment improves survival remains to be seen; the study is continuing.

"This is a great next step" for furthering the immune system's ability to attack lung cancer, said Dr. Antoni Ribas, a cancer specialist at the University of California, Los Angeles, and president of the group sponsoring the conference. Seeing no evidence of disease at surgery in 1 in 4 patients means they "had an immune system that was really ready to go" with proper prodding, he said.

Tests also showed high levels of specialized immune system cells in their tumors, suggesting the treatment had recruited the help needed from the body to attack the disease.

Serious

No serious safety issues were seen, though there were several procedure-related complications and mild side effects including nausea, vomiting, diarrhea and fatigue.

Jake Kestler had the treatment when he was 12.

"It went very well. He lived for a year and four months after that," long enough to celebrate his bar mitzvah, go with his family to Hawaii and see a brother be born, said his father, Josh Kestler, a financial services executive from Livingston, New Jersey.

Jake died April 11, 2019, but "we have no regrets whatsoever" about trying the treatment, said Kestler, who with his wife has started a foundation, Trail Blazers for Kids, to further research.

"It's a devastating disease for these patients and their families," and the early results suggest the virus treatment is helping, but they need to be verified in a larger study, which doctors are planning, said Dr Antoni Ribas, a cancer specialist at the University of California, Los Angeles, and president of the group holding the conference.

Friedman said studies are continuing in adults as well, and plans are in the works for other types of childhood brain tumors. US government grants and several foundations paid for the study, and several doctors have financial ties to Treovir.

Only one similar virus therapy is currently approved in the United States – Imlygic, also a modified herpes virus, for treating melanoma, the most serious type of skin cancer.

US urged to halve emissions: Dozens of European lawmakers, business executives and union leaders on Tuesday urged the United States to cut its greenhouse gas emissions by 50% in the coming decade compared with 2005 levels.

Ahead of US President **Joe Biden**'s climate summit with world leaders next week, European officials and industry representatives called in an open letter for a trans-Atlantic alliance to tackle climate change and achieve a "just and sustainable transition" toward a low-carbon economy.

The suggested goal would almost double the target set by the Obama administration after it signed the Paris climate accord in 2015.

The European Union last year agreed to cut its emissions of carbon dioxide and other planet-warming gases by at least 55% by 2030 compared with 1990 levels.

Both Washington and Brussels are aiming to go 'carbon neutral' by mid-century, a goal scientists say needs to be achieved to keep average global temperatures from rising above 2 degrees Celsius (3.6 Fahrenheit) by the year 2100. The Paris accord's more ambitious target of capping global warming at 1.5 C (2.7 F) by the end of the century compared with pre-industrial times would likely require even more drastic worldwide cuts in emissions.

The open letter, spearheaded by the European Parliament's environmental committee chair, Pascal Canfin, notes that the 27-nation bloc and the United States together account for about a quarter of global CO2 emissions and two-fifths of the global economy.

"By acting together, we can make the difference," they argue. "The global transition we need will never happen if we don't do it right."

The letter, which was backed by numerous business executives from companies such as French automaker Renault, Swedish furniture retailer IKEA and Germany utility firm E.ON, also echoed European concerns that the bloc's efforts to cut emissions could cost many jobs unless other regions of the world take similar steps to phase out coal-fired power plants and other heavily polluting industries. (AP)

Health workers carry patients to shift them from a dedicated COVID hospital to another hospital to vacate the bed for new patients, at Civil hospital in Ahmedabad, India, April 13. New infections have surged in the past month and India has now reported over 13.6 million cases, pushing its toll past Brazil, and making it second only to the United States. In the past 24 hours, over 160,000 new infections have been detected and experts fear that the worst is yet to come. (AP)