Where are we in the Covid-19 vaccine hunt?

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Vaccine for COVID-19 in 2020 is closer to reality: What we know about the top candidates today

The first two vaccine candidates likely to receive FDA authorization appear to be 95% effective against coronavirus, with several others not far behind. Is the end of the pandemic now in sight?

As we near the end of 2020, a COVID-19 vaccine still hasn't been approved in the US. However, that could change in the coming weeks. There are two mRNA vaccine candidates that will most likely be the first to receive Food and Drug Administration authorization and arrive for some people before 2021.

Not only that, but clinical trials have demonstrated two are about 95% effective in preventing COVID-19 infections. The claim means over nine out of 10 people who receive those vaccines will likely not contract COVID-19, even if they're exposed to SARS-CoV-2, the virus that causes the disease, after being inoculated.

US pharmaceutical giant Pfizer announced it has a vaccine that demonstrated 95% efficacy in tests conducted on 43,538 people in six countries, with no serious safety concerns. Moderna, a US biotech firm, announced last week that its vaccine has been demonstrated to be almost 95% effective and also relatively safe in a trial that included over 30,000 people. Another vaccine in development by Oxford University and biotech firm AstraZeneca is on average 70.4% effective, Oxford University announced Monday. Each vaccine requires an initial dose plus a subsequent "booster" dose several weeks later.

Pfizer and BioNTech announced that they have submitted a request to the U.S. Food and Drug Administration (FDA) for an Emergency Use Authorization (EUA) of their COVID-19 vaccine candidate. If authorized by the FDA, then the investigational vaccine could be used in high-risk populations in the U.S. by the end of December 2020.

Moderna, the biotech company that last week announced the results of its COVID-19 vaccine, will apply with the Food and Drug Administration for an emergency use authorization by the end of the month, Moncef Slaoui, the head of the White House Operation "Warp Speed" said on Nov 22, 2020.

The FDA has scheduled a meeting of its Vaccines and Related Biological Products Advisory Committee (VRBPAC) on December 10 to discuss the Pfizer vaccine, and a panel would convene on December 17 to discuss the Moderna vaccine in what he called a "parallel" process.

Numbers at glance

59, 204, 902
Confirmed cases

1, 397, 139
Confirmed deaths

220
Countries, areas or territories with cases

Pfizer, if authorized, expects to produce up to 50 million vaccine doses in 2020, and 1.3 billion in 2021. Moderna plans to ship 20 million doses in 2020 and another 500 million to 1 billion in 2021, if authorized. With over 330 million people in the US alone, not everyone will be able to get a vaccine at once -- the first doses to reach the market will likely go to health care personnel, followed by essential workers, people with underlying medical conditions and older adults. Oxford's next step is to submit the gathered data to regulators across the world for product approval.

Pfizer, Moderna and Oxford represent only the tip of the iceberg. Currently, there are 67 coronavirus vaccines in various stages of clinical trials, with a handful almost ready to apply for authorization. Most experts believe we'll have several more ready to distribute by early 2021, but it may not be until 2022 that life starts to get back to normal.

KEY POINTS:

- Oxford's coronavirus vaccine is 70% effective on average, researchers say.
- Regeneron’s antibody cocktail receives emergency use authorization from the F.D.A.
- An antibody treatment called bamlanivimab receives emergency use authorization from the F.D.A.
- "These are obviously very exciting results," said Dr. Anthony Fauci, the top infectious disease expert in the US, about reports that Moderna's vaccine is nearly 95% effective. "It's just as good as it gets."
- Eli Lilly COVID-19 antibody drug got emergency FDA clearance. It's intended for doctors to use on high-risk patients before hospitalization is needed.
- Remdesivir has become the first drug approved to treat COVID-19 by the FDA, despite a massive study by the World Health Organization that demonstrates that it doesn't work.

COVID-19 vaccine development has been lightning-fast

Several acceleration efforts are currently underway, like the White House's Operation Warp Speed, which is meant to cut through regulatory red tape to speed up vaccine development and be ready to distribute vaccines as soon as they receive FDA authorization.

Vaccines typically take about 10 to 15 years to develop and approve, through four phases that include human trials. But with Operation Warp Speed, approved vaccine projects can submit data to the FDA bit by bit, rather than submitting all the data from a four-phase trial all at once.

Meanwhile, the program is also financially backing efforts to start manufacturing doses while clinical trials are still ongoing. That means if and when those vaccines do get authorized, there will already be a store of doses ready to distribute nationally.

Other promising coronavirus vaccines around the world

Here's a quick look at some of the frontrunners besides Pfizer and Moderna in the race to find a vaccine for COVID-19, including where the vaccines are being developed, where they are on testing them, and when scientists think they might be ready for widespread distribution, if known.

Oxford University/AstraZeneca (UK): AstraZeneca began testing on 100,000 human volunteers in at least three countries. Lead researcher Dr. Sarah Gilbert had initially said AstraZeneca is aiming for a fall 2020 release and, while that may be optimistic at this point after the trial was briefly paused to investigate a participant's illness, it doesn't appear to be significantly delayed. It's currently 70% effective on average.

Sinovac (China): Currently testing its vaccine on about 10,000 human volunteers in China and about 9,000 in Brazil and is set to begin testing on about 1,900 test subjects in Indonesia soon. Honesti Basyir, the president of

Bio Farma, Sinovac's Indonesian partner, has said he expects the vaccine to be ready by early 2021.

Sinopharm (China): Currently testing about 15,000 volunteers in the Middle East in a trial the state-owned company expects to last three to six months. Early results suggest the drug is safe and at least somewhat effective. Sinopharm recently built a second facility to manufacture the vaccine, doubling its capacity to about 200 million doses per year.

CanSino Biologics (China): Set to begin large-scale human trials this summer, CanSino's vaccine has already been approved for the Chinese military. The vaccine is based on a modified common cold virus, which some experts warn could make it less effective than other vaccine efforts.

What to do until a coronavirus vaccine is approved?

Coronaviruses are a large class of viruses and so far there are no vaccines for any of them. While there are promising early results, there's no guarantee a vaccine will be ready by 2021. Statistically, only about 6% of vaccine candidates ever make it through to market, according to a Reuters report from April. However, health officials are very optimistic that the Pfizer vaccine and others like it could end the coronavirus pandemic.

Whether or not COVID-19 vaccines are effective at stopping the spread of coronavirus will depend a lot on how our bodies build immunity to the disease. Here's what we know so far about whether or not you can get COVID-19 more than once.

Source & Reference

- National Institute of Health (NIH)
- New York Times
- World Health Organization (WHO)
- Milken Institute Reports
- FDA press release
- Pfizer news
- modernatx
- timesnownews.com
- businesstoday.com
- BBC news
- John Hopkins
- Reuters