

CHECK THIS OUT

THE COVID-19 VACCINES

Drug makers and research centers across the world are scrambling to deliver a safe and effective vaccine to help bring an end to the coronavirus pandemic that has claimed over 1.3 million lives worldwide. In recent weeks, three Covid-19 vaccines have been found to be highly effective in late-stage trials, boosting optimism at a time when health systems in Europe and the U.S. are once again being pushed to breaking point.

	PFIZER/BIONTECH	MODERNA	ASTRAZENECA/OXFORD
Technology	mRNA	mRNA	Adenoviral Vector
Efficacy	95%	95%	62% to 90%
Doses	2, 28 Days Apart	2, 28 Days Apart	2, 28 Days Apart
Storage Temperature	-94°F Highly Specialized Freezers	36°F to 46°F Normal Refrigeration	36°F to 46°F Normal Refrigeration
Shelf-Life	5 days	1 month	6 months
Price per Dose	\$19.50	\$25 to \$37	\$3 to \$4
For Profit?	Yes	Yes	After pandemic ends
Earliest Rollout with Regulatory Approval	December 10, 2020	December 10, 2020	Possibly January 2021
Possible Doses by End of 2020	25 Million	10 Million	100 Million

TECHNOLOGY

Both Pfizer and Moderna are using experimental technology that employs messenger RNA, or mRNA. There is currently no vaccine on the market that uses mRNA, so these vaccines are a world-first. Although trial efficacy favors mRNA over other technologies, some experts have expressed concerns over its unknown long-term effects.

AstraZeneca vaccine is based on time-tested technology that employs a harmless cold virus (called adenovirus) that has been genetically modified to stimulate an immune response against the corona virus. This adenovirus technology was first developed and manufactured for the Ebola vaccine.

EFFICACY

Much to everyone's surprise, the experimental mRNA vaccines are most effective (95%), while the time-tested adenoviral vector vaccine shows a 62% to 90% efficacy. In all three clinical trials, the results showed that the vaccine prevented both mild and severe coronavirus infections. Keep in mind that not all vaccines are equally effective. Some, like the seasonal flu vaccine, hover below 60%. Others, like the polio vaccine, are almost 100% effective.

STORAGE TEMPERATURES & SHELF-LIFE

Pfizer's vaccine poses a logistical problem. It must be stored at -94° F, which is an obscenely cold temperature that requires specialized freezers. Once it is out of the deep freeze, it's only good for 5 days. This makes mass distribution much more challenging in rural areas and low-income countries.

Moderna and AstraZeneca can store their vaccines in normal refrigerators. Moderna's is potent for a minimum of 30 days, while AstraZeneca's can last at least 6 months.

PRICING

Both Pfizer and Moderna plan to profit from the vaccine. AstraZeneca is selling at cost until the pandemic ends, which is why its vaccine is so cheap. Many countries have said they will cover the cost of inoculating their residents.

VACCINE ROLLOUT

Pfizer, Moderna and AstraZeneca have already started manufacturing their vaccines. Though news has been extremely positive for the global economic outlook, huge challenges remain before a vaccine can be rolled out. The global battle to secure prospective supplies has raised alarm about equitable access, while questions remain over logistics, distribution, and cost.

WHAT'S NEXT

There is no doubt that more vaccines will come to market in the near-term. Among them, is a one-dose shot from Johnson & Johnson. Like AstraZeneca, it uses adenovirus technology. Good news regarding the single-shot trial could simplify the distribution of millions of doses.