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China COVID vaccine reports mixed results — what does that mean for the pandemic?

Scientists say CoronaVac could reduce cases of severe disease, particularly in countries with raging outbreaks.

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A trial of the CoronaVac shot reported results this week. Credit: Amanda Perobelli/Reuters

Long-awaited results about the effectiveness of a leading Chinese COVID-19 vaccine were tinged with disappointment and confusion this week. But researchers say the vaccine could help reduce deaths from the disease.

Researchers in Brazil reported that CoronaVac, developed by Beijing-based Sinovac, was 50.4% effective at preventing severe and mild COVID-19 in late-stage trials. That's significantly lower than the 90% efficacies of several leading vaccines.

The CoronaVac figures were much lower than those from early trials of the same vaccine in Turkey and Indonesia, and below the efficacy first reported by the Brazil trial team last week. Researchers from the Butantan Institute in São Paulo had announced on 7 January that the vaccine's efficacy

was 78% at preventing the disease — but revealed this week that the figure was based on the narrow criteria of people needing medical attention.

Still, if the latest results check out — they have not been peer reviewed — the two-dose vaccine could be immediately beneficial in countries with raging outbreaks, such as Brazil, say researchers. "When you've got communities that are absolutely desperate, and have no other choice, then this is a really great thing to have," says Hilda Bastian, who studies evidence-based medicine at Bond University in the Gold Coast, Australia.

The Brazil trial recorded 252 cases of COVID-19 — 167 in people who received the placebo and 85 who were vaccinated — in some 9,200 healthcare workers. None of the participants who received the vaccine had to be hospitalized with severe COVID-19. If the data are confirmed, the vaccine could have a role in preventing disease in every country, says Paul Offit, a vaccine scientist at the Children's Hospital of Philadelphia in Pennsylvania.

Flow-on effects

Brazil's data are important for Turkey, which yesterday began its plan to roll out millions of CoronaVac doses under an emergency-use authorization announced on 13 January, says Murat Akova, a clinical infectious-diseases researcher at Hacettepe University School of Medicine in Ankara, who is a coordinator of a late-stage CoronaVac trial in Turkey.

Delays in Brazil's reporting of trial results meant that Turkey relied on early data from its own efficacy trial when it agreed to distribute CoronaVac, says Akova. In late December, the Turkey trial reported that CoronaVac was 91.25% effective at preventing symptomatic disease on the basis of 29 COVID-19 cases among 1,322 volunteers.

Brazil's results are disappointing when compared with the two RNA-based frontrunners, developed by Pfizer–BioNTech and Moderna, which were found to be more than 90% effective in trials, says Akova. But CoronaVac is still valuable to Turkey because it will prevent most severe cases.

Indonesia has also authorized CoronaVac for emergency use and started its national vaccination programme on 13 January. Results from an efficacy trial of about 1,600 people in that country found the vaccine was 65.3% effective at preventing symptomatic disease on the basis of 25 COVID-19 cases, says Jarir At Thobari, a vaccinologist at Gadjah Mada University in Yogyakarta, Indonesia.

Given Indonesia's large population, a lot of people could benefit from the vaccine even at 65% effectiveness, he says.

Scientists say mixed results are not surprising for a vaccine with lower efficacy that has been tested in relatively small numbers of people. Mixed results have also been reported from trials of the COVID-19 vaccine developed by the University of Oxford, UK, and drug firm AstraZeneca. "If you've got a vaccine with really high efficacy, you don't need a whole lot of numbers to get a clear picture. But when it's complicated, then you really need bigger numbers to get a better handle on what's going on," says Bastian.

Researchers involved with the Brazil trial say the lower efficacy compared with other vaccines could be because the two shots were administered only two weeks apart, which did not leave sufficient time for participants to reach peak immunity. They also say that the trial, which recruited only health professionals, who are more likely to be exposed to the virus, report symptoms and get tested, probably identified more mild infections than did trials in Indonesia and Turkey, which included the public. The Brazilian health regulator, Anvisa, will decide whether to approve CoronaVac and AstraZeneca's vaccine for emergency use on 17 January. Some seven million doses of CoronaVac have already been distributed across China.

Other benefits

The roll out of CoronaVac, which uses an inactivated version of SARS-CoV-2 to induce an immune response[1], could see more widespread use in other nations, says Adrian Esterman, a biostatistician at University of South Australia in Adelaide. Compared with the Pfizer–BioNTech vaccine, which must be stored at −70 °C, CoronaVac is stable at fridge temperatures and easier to distribute.

On the basis of the data reported so far, the vaccine seems safe, with only a few people experiencing mild symptoms such as headache.

A World Health Organization (WHO) team in China is reviewing manufacturing practices for Sinovac's vaccine, and those produced by Chinese state-owned Sinopharm. If the WHO lists the vaccines for emergency use, that will accelerate their global distribution, says Bastian.

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