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## Covid-19: Novavax vaccine efficacy is 86% against UK variant and 60% against South African variant

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The SARS-CoV-2 vaccine produced by the US biotechnology company Novavax is 95.6% effective against the original variant of SARS-CoV-2 but also provides protection against the newer variants B.1.1.7 (85.6%) and B.1.351 (60%), preliminary data from clinical trials show.

Interim results have been released from a phase III trial carried out in the UK with more than 15 000 participants aged between 18 and 84, including 27% over the age of 65. The trial tested two doses of the vaccine administered three weeks apart and reported 62 symptomatic cases of covid-19, of which 56 were in the placebo group (saline) and six in the vaccine group. Of the 62 cases, only one was severe (in the placebo group), and 32 were with the UK variant.

A phase II trial of the Novavax vaccine is also ongoing in South Africa with 4400 volunteers, in which 29 cases have been seen in the placebo group (one severe) and 15 in the vaccine group. Preliminary sequencing data of 27 of these cases found that 93% (25) involved the South Africa variant.

The principal investigator in the South African trial, Shabir Maddi, said, "I am encouraged to see that Novavax plans to immediately begin clinical development on a vaccine specifically targeted to the variant, which together with the current vaccine is likely to form the cornerstone of the fight against covid-19."

Both the South Africa and UK trial—funded in part by the Coalition for Epidemic Preparedness Innovations and the Bill and Melinda Gates Foundation—are continuing, and further analysis is expected to be shared as more data become available. Another phase III trial in the US and Mexico is under way and has randomised more than 16 000 participants; it expects to hit its 30 000 target in February.

Novavax began the rolling submission process with the UK Medicines and Healthcare Products Regulatory Agency in January. The UK has secured 60 million doses. The NVX-CoV2373 vaccine can be stored at 2°C to 8°C and has been found to be safe. An interim analysis of clinical trial data reported that severe, serious, and medically attended adverse events occurred in low numbers and were balanced between the vaccine and placebo groups.

### Johnson & Johnson vaccine

Meanwhile, Johnson & Johnson has reported that its one dose vaccine is 66% effective at preventing moderate to severe illness 28 days after vaccination.

The phase III trial was carried out across three continents and included 43 783 people (44% in the US, 41% in Central and South America, and 15% in

South Africa). A third (34%) of participants were aged over 60, and 41% had comorbidities that have been associated with an increased risk of severe covid-19.

The trial found 468 symptomatic cases of covid-19, although the company's announcement lacked many key details, including how many of these cases were in the vaccine group and how many in the control group.

Kevin Marsh, professor of tropical medicine at the University of Oxford and co-lead of the covid-19 team at the African Academy of Sciences, said, "It is possible that some people will look at the overall reported efficacy of 66% in preventing moderate to severe covid-19 and focus on comparisons with potentially higher 'top-line' efficacy reported for some other vaccines. This would be a mistake.

"The real headline result is that a single shot vaccine, capable of easy long term storage and administration, provided complete protection against hospitalisation and death. This is important, because the immediate requirement of vaccination globally is to limit deaths as quickly as possible. While potentially important for all regions, these results are especially encouraging for Africa and low to middle income countries, where the combination of a single shot, ease of storage, and protection against multiple variants is critical."

The company intends to file for US Emergency Use Authorization in early February. Meanwhile, the UK has agreed a deal for 30 million doses.

### What technology do the leading SARS-CoV-2 vaccines use?

#### Viral vector vaccines

- Johnson & Johnson
- Oxford-AstraZeneca
- Gamaleya Research Institute

#### Protein based vaccines

- Novavax

#### mRNA vaccines

- Pfizer-BioNTech
- Moderna

#### Inactivated vaccines

- Sinopharm
- Sinovac
- Sinopharm-Wuhan
- Bharat Biotech