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IMPRESSIVE early trial results for another coronavirus vaccine appear to trump those released just a week ago by Pfizer and BioNTech, and ones from a Russian trial.

The latest results, for Moderna’s mRNA-1273 vaccine, suggest that it is 95 per cent effective and works in those who need protecting the most – people aged over 65 – the US-based company announced on 16 November. The vaccine can also be stored in a normal freezer or fridge, which would help with distributing it.

If the Moderna and Pfizer vaccines work as well as their results imply, the prospects for other coronavirus vaccines that act in the same way, several of which are already undergoing human trials. Such vaccines are desperately needed: about 55 million covid-19 cases have now been reported globally, with cases rising especially fast in the US, which has been reporting more than 150,000 cases per day.

More than 30,000 people in the US aged 18 and over are taking part in the phase III trial of the Moderna vaccine. Half of the participants were given a placebo.

The interim analysis is based on the first 95 cases of covid-19 detected. Ninety of those people – including 15 who had severe cases – were among those given the placebo. Just five – none with severe symptoms – were among those given the vaccine.

The company says the 95 people who got covid-19 included some aged 65 or over, and 20 people “identifying as being from diverse communities”.

This is especially promising because the results of the trial by Pfizer and BioNTech don’t reveal detailed age profiles of participants, so it isn’t clear if that vaccine works in those over 65.

However, Anna Blakney at Imperial College London says we will need to see more data to confirm that vaccination is effective in older individuals. “There’s not really a difference in efficacy between the two vaccines,” she says.

So far, the results also suggest that the Moderna vaccine is safe. Some participants reported pain at the injection site, tiredness, headaches and muscle or joint aches, as often happens after vaccinations. No serious side effects were reported.

The Moderna and Pfizer vaccines are messenger RNA (mRNA) vaccines, and include the gene for making the spike protein that protrudes from the coronavirus (see page 14 for more).

“it is really promising for the field of mRNA vaccines in general – it is easier to make them at scale”

Three other mRNA coronavirus vaccines are already in human trials, so the prospects for these look good, too. “It is really promising for the field of mRNA vaccines in general,” says Blakney.

What’s more, mRNA vaccines are simpler to manufacture than more traditional vaccines, she says. “It’s just so much easier to make them at scale.”

There are also five DNA vaccines in human trials. Here, the virus spike protein gene is delivered in the form of DNA rather than mRNA. However, special equipment and training is needed to dose people with DNA vaccines, unlike with mRNA ones.

Several adenovirus vaccines are also in human trials, including one being developed by AstraZeneca and the University of Oxford, and Russia’s Sputnik V.

These vaccines also work by delivering the gene for the spike protein to cells, but packaged inside an empty adenovirus rather than in fatty droplets like most mRNA and DNA vaccines.

Russia claimed last week that Sputnik V is 92 per cent effective, but many experts say there have been too few covid-19 cases in its trial so far to justify this claim.

If at least some of these other vaccines prove as effective, as now looks more likely, vaccinating the world’s population as soon as possible should be much easier.