

Could TB vaccine protect medics from COVID-19?

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Researchers are testing whether the tuberculosis vaccine could either reduce the risk of being infected by the coronavirus, or limit the severity of the symptoms

Could a common vaccine used for decades to protect against tuberculosis help shield health workers from COVID-19?

While developing a specific immunisation against the coronavirus sweeping the planet will likely take many months, researchers are studying the potential benefits of the BCG shot, which many people around the world receive as children.

Laboratories and pharmaceutical firms are racing to find medicines to tackle COVID-19, which has infected more than a million people, killed at least 50,000 and for which there is currently no known treatment, vaccine or cure.

They are also looking at repurposing existing drugs.

Experts remain cautious

"We have known for decades that BCG has non-specific beneficial effects", in that it protects against diseases other than the one for which it was created, Camille Loch, of the French public health research institute Inserm, told AFP.

Children vaccinated with BCG suffer less from other respiratory illnesses, it is used to treat certain bladder cancers and it could protect against asthma and autoimmune diseases such as type 1 diabetes.

Researchers want to test whether the [tuberculosis vaccine](#) could have a similar effect against the new coronavirus, either by reducing the risk of being infected, or by limiting the severity of the symptoms.

In France, where the BCG vaccine was compulsory until 2007, "most of the study participants will have already had a first vaccination", but the protective effect of this decreases over time, said Loch.

Because [healthcare workers](#) are on the front lines of the efforts to tackle COVID-19, they should be the "first target" if there is any benefit found

with the BCG vaccine, said Locht, who is finalising details for a clinical trial in France.

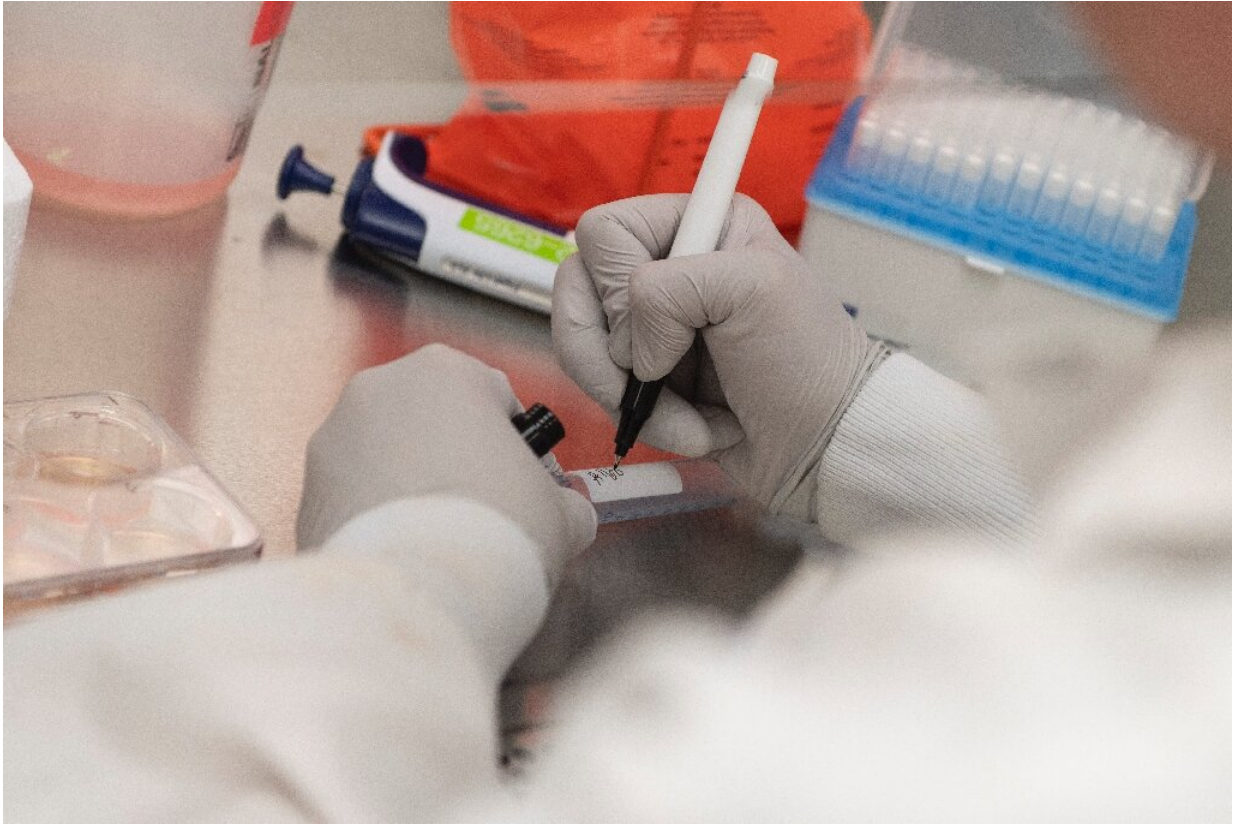
But experts remain cautious on the potential of the BCG to provide protection.

'Military exercise in peacetime'

"That is exactly the reason for this research," says Mihai Netea, professor of experimental internal medicine at Radboud University in the Netherlands, which recently announced a clinical trial, with the University of Utrecht involving hundreds of healthcare workers.

This will see 500 medical professionals receive the BCG jab and 500 get a placebo.

"If during this epidemic fewer people in the BCG-vaccinated group would drop out due to illness, this would be an encouraging result," added Netea, a specialist in "trained immunity".



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This is a relatively new concept based on the discovery that our [innate immune response](#)—the body's generalised defences—also has a memory, alongside the acquired immunity, which develops antibodies after coming into contact with a specific pathogen.

The BCG vaccine does not directly protect against the coronavirus, but provides a boost to the immune system which may lead to improved protection and a milder infection, Radboud university said of the study.

The idea is that the innate immune system can be prepared, or "trained"

to better combat attacks, thanks in particular to live attenuated vaccines, such as BCG or measles, which contained a weakened sliver of the original pathogen.

In the case of COVID-19, in addition to infection by the virus itself, some patients have also suffered excessive immune responses, with the uncontrolled production of pro-inflammatory proteins, cytokines.

"Vaccination, in particular against BCG, might help to better orchestrate this inflammatory immune response," said Laurent Lagrost, Inserm research director who works on links between inflammation and the [immune system](#).

The vaccine acts as a "military exercise in peacetime" so that the body can "fight the enemy effectively in wartime," he said in an interview this week with French broadcaster BFMTV.

International effort

A separate trial of the BCG vaccine has also been launched in Australia, with some 4,000 health workers, by the Murdoch Children's Research Institute.

Microbiologist Locht wants to harmonise the criteria of the French study with that planned in four Spanish hospitals, in order to better compare their results.

However, researchers in Spain, instead of using the BCG, would like to try a new tuberculosis vaccine developed by the biotech firm Biofabri.

This vaccine candidate, whose safety has already been demonstrated, should offer "better protection", said Carlos Martin, professor of microbiology at the University of Zaragoza, because it is "developed

from a strain isolated in humans".

In contrast, he said the BCG is prepared from a strain of the bacteria that infects cattle, and two genes very important to the virulence of tuberculosis have been deactivated in the vaccine candidate.

Another advantage of the new vaccine is that it is made in Europe and could be quickly made available, while the BCG suffers from strong supply tensions and using it for adults against COVID-19 could deprive children of it in countries where tuberculosis remains endemic.

In Germany, the Max Planck Institute for Infectious Biology is also preparing a trial with a genetically-modified [vaccine](#) candidate, developed by the Serum Institute of India.

In coordination with these countries, Inserm announced on Thursday that clinical trials could also be launched in Africa, where health systems are expected to come under acute pressure from the [coronavirus](#) pandemic.

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