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Old vaccine for tuberculosis may help protect older people against COVID-19

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A team of researchers from the CMR-National Institute for Research in Tuberculosis and the ICMR-National Institute of Epidemiology, both in India, has found evidence suggesting that an old vaccine used to reduce

the threat of tuberculosis may give older people some protection against COVID-19. In their paper published in the journal *Science Advances*, the group describes their study of the Bacillus Calmette-Guérin (BCG) vaccine as a possible preventive measure for older people. Valerie Koeken with Radboud University Medical Center has published a Focus piece in the same journal issue explaining why inflammation is more of a concern with older people and outlining the work by the team in India.

As Koeken notes, as people grow older, they tend to develop low-grade, chronic inflammation, which makes them more susceptible to many types of diseases—it can also increase symptoms from diseases such as COVID-19, which explains in part why older people are much more likely to die from such infections. In this new effort, the researchers took a new look at an old vaccine to find out if it might prove useful for unvaccinated older people.

The study involved vaccinating 82 volunteers between the ages of 60 and 80 with the BCG vaccine and then studying blood samples taken a month later. In analyzing the samples, the researchers found decreases in several cytokines that have been associated with promoting inflammation: IL-6, type 1 interferons, interleukin-2 (IL-2) and TNF-alpha GM-CSF. The levels of the same cytokines were also found to be lower than those for a control group of unvaccinated volunteers. The researchers found that the BCG-vaccinated volunteers also had lower levels of some chemokines, such as matrix metalloproteinases and phase proteins, both of which have also been associated with promoting inflammation.

The researchers note that many of the cytokines that were reduced in the BCG volunteers have been identified as drivers of more severe COVID-19, which they also note suggests that the BCG vaccine might prove useful as a stop-gap measure for older people awaiting vaccination—if it could reduce inflammation in infected patients, it

might save lives.

More information: Nathella Pavan Kumar et al, Effect of BCG vaccination on proinflammatory responses in elderly individuals, *Science Advances* (2021). DOI: 10.1126/sciadv.abg7181

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