

## MEDIA RELEASE

### **New analysis predicts how well vaccines will work against COVID-19 strains such as Delta – and why we need boosters**

**(SYDNEY, Tuesday 16 November 2021)** Vaccines are less effective against some COVID-19 variants and boosting may be required within one year to maintain efficacy above 50 per cent, according to a new study published today in *Lancet Microbe*.

The researchers from UNSW Sydney's Kirby Institute, the Sydney Institute for Infectious Diseases at the University of Sydney and the University of Melbourne's Doherty Institute have conducted an analysis that can help inform the COVID-19 response by identifying an 'immune correlate' of vaccine protection.

"Our [previous research](#) showed that we can measure neutralising antibody levels as a 'proxy' for immune protection from COVID-19 infection. In this new analysis, we've tested this against the variants of concern, including delta, and found that the model continues to provide a robust prediction of immune protection, despite the differences between the viral sequence seen in variants like delta," says Dr Deborah Cromer, lead author on the paper.

This is the first and largest study to predict protection against variants using neutralising antibodies, and it provides insights that can inform vaccine rollouts.

"Vaccines work well in the first months after vaccination and against the viruses that were used to make them. However, our study shows reduced efficacy against COVID-19 disease resulting from other variants, such as Delta. This efficacy declines with time, and our analysis is able to pre-emptively predict this decline based on analysis of antibody levels," says Dr Cromer.

"The major implication of our research is that in order to maintain immune protection across a population, booster shots will be required. Without boosters, protection from symptomatic COVID may drop below 50 per cent after six months, which means more people will become infected. Reassuringly though, protection against severe disease and death will likely remain high over the first year.

"Optimal timing for boosters will depend on the availability of boosters, and whether the aim is to reduce overall case numbers or reduce the burden on the health system," continues Dr Cromer.

"What this model does is give a clearer picture to policy makers about how levels of protection against symptomatic disease, severe disease and death are likely to change based on different vaccines, emerging variants and over time.

"In Australia, the TGA recently approved booster doses after six months, which will help maintain high levels of protection against all stages of disease."

The analysis also found that a third booster shot within a year increases immunity to higher levels than those seen after a full primary vaccination schedule. "This is excellent news, particularly for people who are six months from their initial vaccination, and who are currently being offered third dose vaccination in Australia," says Dr Cromer. "Vaccines have had an incredible impact in controlling the current COVID-19 outbreak and will continue to provide very good protection. But boosters will make that good protection even better."

Professor Jamie Triccas from the University of Sydney says this research is crucial because it shows that we can predict vaccine efficacy from a relatively simple laboratory test.

“It is likely that new COVID-19 variants will continue to emerge, as we have seen with Delta, with varying transmissibility and severity. Vaccines may not work as well against some of these variants, but fortunately, our model allows us to predict this.

“Essentially, we can predict how current vaccines will work against new variants, and test the efficacy of new vaccines, based on the results of small clinical trials that measure antibody responses. That’s a huge win for the battle against COVID-19.”

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Dr Deborah Cromer and Professor Jamie Triccas are available for interviews.