MEDIA RELEASE – Tuesday 28 June 2022

COVID-19 vaccine booster dose protects against Omicron severe disease, study confirms

An Australian-first COVID-19 vaccine effectiveness study has shown that receipt of a booster (third) COVID-19 vaccine dose provided 65% greater protection against hospitalisation or death from Omicron than two vaccine doses.

The study findings confirm that the COVID-19 vaccine schedule used in Australia protects against severe disease from Omicron SARS-CoV-2 infection.

The study, led by the National Centre for Immunisation Research and Surveillance (NCIRS), followed over 2 million adults aged 40 years and over living in Greater Sydney during the peak of the Omicron wave in Australia in January and February 2022 for SARS-CoV-2 infection, hospitalisation and death.

For adults aged 70 years and over the benefits were especially great with a significant reduction in hospitalisation or death from COVID-19. For every 192 adults aged 70 years and over who received a third dose, at least one hospitalisation or death was prevented. The benefits of a third dose were also significant in those aged 40–69 years.

Associate Professor Bette Liu, the study's lead author from NCIRS and the University of New South Wales, Sydney, said, "*In Australia about 70% of the eligible population has received a third COVID-19 vaccine dose. Our study shows that optimal protection occurs when vaccine recommendations are followed; I urge those 30% who are yet to receive a third dose to do so as soon as possible.*

COVID-19 vaccination and vaccination for other respiratory viruses such as flu are particularly important to reduce health system burden as we see a surge in these respiratory viral infections over winter," she added.

While there was evidence of waning of protection against infection after 2 doses, receipt of a third vaccine dose resulted in much higher protection, particularly against severe disease. Vaccination also resulted in enhanced protection in the small number of people who had previously been infected with the Delta variant.

"This Australian study is an important addition to the international evidence base on COVID-19 vaccine effectiveness and SARS-CoV-2 infection," said Professor Kristine Macartney, Director of NCIRS, Professor at The University of Sydney and senior author of the study. "*It is unique because much of the Australian population had not previously been infected with SARS-CoV-2 by the end of 2021, yet we have shown strong protection against disease from Omicron following an mRNA vaccine as a third dose, irrespective of the vaccine brand given initially. Future studies will look at protection gained following a fourth dose of COVID-19 vaccine, which is now recommended for those at highest risk of severe disease."*

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Declaration: This study has been published as a pre-print and has not undergone academic peer review; changes may be made before final publication. The authors declare no competing interests.

The work was funded by the NSW Ministry of Health.

National Centre for Immunisation Research and Surveillance (NCIRS)
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