



## COVID-19 Severity with Omicron Variant Infection

Attapon Cheepsattayakorn<sup>1,3\*</sup>, Ruangrong Cheepsattayakorn<sup>2</sup> and Porntep Siriwanarangsun<sup>3</sup>

<sup>1</sup>10<sup>th</sup> Zonal Tuberculosis and Chest Disease Center, Chiang Mai, Thailand

<sup>2</sup>Department of Pathology, Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand

<sup>3</sup>Faculty of Medicine, Western University, Pathumtani Province, Thailand

**\*Corresponding Author:** Attapon Cheepsattayakorn, 10<sup>th</sup> Zonal Tuberculosis and Chest Disease Center, Chiang Mai, Thailand.

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A recent study in South Africa demonstrated that IgG seroprevalence of SARS-CoV-2 (COVID-19) ranged from 56.2% (95% confidential interval (CI), 52.6 to 59.7) among children with age younger than 12 years to 79.7% (95% CI, 77.6 to 81.5) among adults with age older than 50 years [1]. Female patients were higher IgG-seroprevalence levels than male cases [1]. The Omicron variant was predominant during the latest COVID-19-pandemic fourth wave in this country with one month from the onset to the peak of this latest wave, compared to the previous third wave of the COVID-19 pandemic, whereas the incidences of hospital admission, excess death attributable to COVID-19 in this latest fourth wave were consistently lower than the earlier waves' incidences [1]. In Omicron variant that mainly affecting spike protein, cell-mediated immunity is likely to be more durable than neutralizing-antibody-mediated immunity in the small mutation context [2], whereas natural infection induces cell-mediated immunity targeting membrane protein, nucleocapsid protein, and spike protein [3] and long-lived cytotoxic (CD8+) T cells with a half-life of 125 to 255 days [4].

In conclusion, protection by hybrid cell-mediated immunity via COVID-19 vaccination and COVID-19 natural infection in countries that immunity is mainly from COVID-19 vaccination remains to be investigated, whereas 70% vaccine effectiveness against severe COVID-19 with Pfizer BioNTech (BNT162b2) in South Africa could be due to hybrid cell-mediated immunity.

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