

## TMJ Blogs

### **Omicron strain demands new terminology to describe vaccination status against SARS-CoV-2 infection**

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Recent papers<sup>1-3</sup> have demonstrated and confirmed that the omicron variant of SARS-CoV-2, which is now the dominant strain worldwide, is resistant to neutralising vaccinations, and that immunity from two vaccinations is poor. On the other hand, it increases substantially after a third administration.

Garcia-Beltran and his colleagues<sup>1</sup> state that, in a study of 239 vaccinees internationally, “...Taken together, our results indicate that two-dose mRNA-based vaccines are effective at inducing neutralizing immunity to SARS-CoV-2 wild-type and Delta variants but suboptimal for inducing neutralizing responses to the Omicron variant” but that “...recently boosted vaccinees exhibited potent neutralization of Omicron variant pseudovirus that was only moderately decreased relative to wild-type neutralization.” These conclusions are clearly shown in the published graphs. A second in an as yet unpublished paper in Nature from France and Belgium shows the same pattern of immune responses of Omicron, and the same conclusions were drawn.

The third community based study from Israel found that “...In 1,928 health care workers in Israel who were previously vaccinated with a 2-dose series of BNT162b2, administration of a booster dose compared with not receiving one was significantly associated with lower risk of SARS-CoV-2 infection during a median of 39 days of follow-up (adjusted hazard ratio, 0.07)”. This is entirely consistent with the two other studies cited here.

These studies lead to several important conclusions. Firstly, the phrase “fully vaccinated” is now obsolete, since 2 doses of vaccine are relatively ineffective against the dominant Omicron strain. Continued use to describe vaccinees who have not had a booster dose as fully vaccinated is very misleading. Furthermore, this criterion represented in current smart phone apps to permit admission to public events is positively dangerous in any jurisdiction where Omicron is the dominant strain of SARS-CoV-2, as it will result in entry of non-immune and possibly infectious individuals. It will therefore promote rather than diminish community spread of the virus.

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#### **References**

1. Garcia-Beltran WF *et al.* mRNA-based COVID-19 vaccine boosters induce neutralizing immunity against SARS-CoV-2 Omicron variant. Cell (2022); <https://doi.org/10.1016/j.cell.2021.12.033>
2. Planas D, Saunders N, Maes P *et al.* Considerable escape of SARS-CoV-2 Omicron to antibody neutralization. Nature (2021); <https://doi.org/10.1038/s41586-021-04389-z>
3. Spitzer A, Angel Y, Marudi O *et al.* Association of a Third Dose of BNT162b2 Vaccine With Incidence of SARS-CoV-2 Infection Among Health Care Workers in Israel. JAMA. <https://jamanetwork.com/journals/jama/fullarticle/2788104> doi:10.1001/jama.2021.23641 Published in-line 10/1/2022.

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