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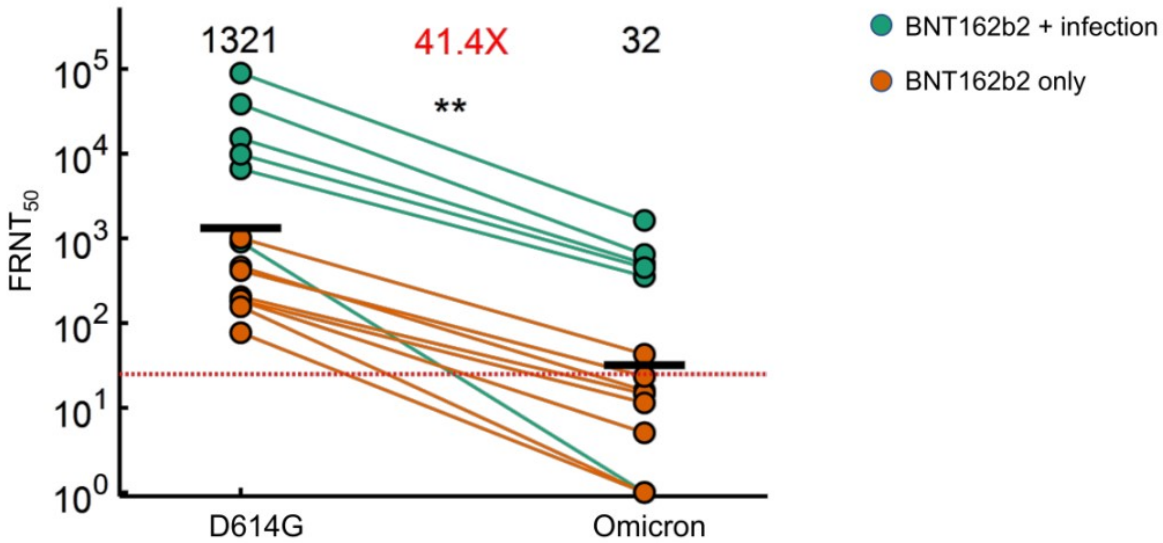
# Omicron Neutralization Update

6-8 minutes




Omicron neurtalization: vaccination vs. vaccination + infection (Sigal)

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**Important new data on Omicron neutralization in vaccinated vs. recovered people.**

Professor Alex Sigal of the African Health Research Institute in Durban, South Africa, has presented the first data on Omicron neutralization in Pfizer vaccine study participants, both with and without previous infection (see figure above).

As the figure above shows, Omicron neutralization in vaccinated people without prior infection (red) decreased to near-zero levels

(a 41-fold decline compared to the initial Wuhan D614G variant). In contrast, neutralization in previously infected plus vaccinated people (green) remained relatively high and is “likely to confer protection from severe disease”, according to the authors.

Recovered people without additional vaccination have not been considered in this study, but previous studies found no significant benefit of vaccination in recovered people.

Three additional aspects are noteworthy:

**1)** The plasma of vaccinated people was taken on average just 12 days post-vaccination, i.e. at the point of highest antibody levels and neutralization effectiveness (see table below). In people vaccinated months ago, neutralization will be even lower and likely no longer detectable.

**2)** In previously infected people, the plasma was taken a full 417 days post-infection and 27 days post-vaccination, on average (see table below). Despite this, previously infected people still had much higher neutralization levels.

**3)** In this Pfizer vaccine study, previously infected people had been infected during the first South Africa wave, which was dominated by the initial Wuhan D614G variant without any antibody escape mutations. However, the second South African wave was dominated by the Beta variant, which features both a class 1 (K417N) and a class 2 (E484K) antibody escape mutation (see table below). Thus, people previously infected with the Beta variant are likely to have even stronger protection against Omicron, which features escape mutations against antibody classes 1, 2, and 3.

This extra-protection may also apply to people in Latin America

who were previously infected with the Gamma (Brazilian) variant, but not to people in the US and in Europe who were infected with the Wuhan/D614G (2020), Alpha (spring 2021) or Delta (summer 2021) variant.

In addition, previously infected people may benefit from mucosal and T-cell immunity, which could not be taken into account in the current South African study, either. While it has been reported that PCR-positive hospitalizations in South Africa are currently increasing again, it should be noted that a full 76% of these patients were in fact hospitalized not due to covid.

There have been reports that Omicron **might be milder** than previous variants. While this would be fantastic news, it should be taken into account that these reports are based primarily on **1)** people in South Africa, most of whom already have natural immunity from previous infection (60% to 80% of the population; only 25% vaccination rate), and **2)** non-elderly people (e.g. travelers), in whom covid has always been rather mild anyway (despite relentless propaganda to convince you otherwise).

The question of disease severity can only really be answered once Omicron reaches high-risk groups. In general, the fact that Omicron is able to displace Delta (even in Europe) indicates that Omicron is currently at least as transmissible as Delta, which in turn requires rather high peak viral loads and infectiousness. Unless other mutations reduce host impact, this would not indicate lower virulence. Instead, it is reasonable to assume that virulence may be similar to previous variants.

**In conclusion**, unless Omicron turns out to be much milder than previous variants, it is clear that current vaccines will have to be

updated. It should be noted that in contrast to influenza viruses, SARS-CoV-2 has now exhausted most of its major immune escape mutations and new vaccines are likely to remain effective against most future variants. Nevertheless, the use of effective early treatment options in high-risk patients should remain a top priority.

It is clear that only widespread natural immunity will ultimately end the covid pandemic. The fact that millions of "unvaccinated" people are currently being threatened with losing their jobs, regardless of their actual immunity status, can only be described as a crime against humanity.

Moreover, the fact that young people are being pressured to take an experimental (and now useless) vaccine against a virus that poses very little risk to them must be seen as a major medical crime.

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**Update I**: A new German analysis confirms 0% neutralization six months after vaccination with Astra-Zeneca, Biontech or Moderna, and only 25% three months after a Biontech booster (vs. 95% against Delta). Furthermore, available monoclonal antibodies have no effectiveness against Omicron.

**Update II**: A new Swedish Omicron neutralization study in 17 previously-infected hospital workers and 17 recent blood donors in Stockholm found that neutralization was only about 7-fold lower compared to the original Wuhan variant. Given that Stockholm has an infection rate of about 75%, this study again confirms the protective effect of naturally-acquired immunity.

**Update III**: Independent genetic researchers note that the Omicron

variant, with its many spike protein mutations, might in fact have escaped from the Durban lab in South Africa, which has been involved in immune escape and serial passaging cell culture experiments for quite some time.

## Figures

### A) South African study – participant data

Table S1: Summary Table of Participants:

| | All | Vaccinated only | Infected and vaccinated |
|---|---|---|---|
| **Number of Participants** | 12 | 6 | 6 |
| **Age (years)** | 57 (41-68) | 54 (36-71) | 57 (45-66) |
| **Days post-vaccination** | 24 (10-33) | 12 (10-39) | 27 (22-30) |
| **Days post-infection** | 417.5 (378-458) | - | 417.5 (378-458) |
| **Days post-infection to vaccination** | 379 (350-434) | - | 379 (350-434) |
| **Date range of symptom onset** | | - | Jun – Sep 2020 |
| **Male sex** | 4 | 2 | 2 |

All values are median (IQR) and inclusive of all samples used (early and late timepoints for 2 participants). All participants confirmed infected in ancestral infection wave until November 2020. Evidence of reinfection for one participant; June 2021, Delta wave.

Participant data of the South African Omicron study (Sigal)

### B) SARS-CoV-2 Antibody Escape Mutations

**SARS-CoV-2 Variants: Escape from Antibody Classes 1 to 3**

| Detection | Name | Class 1 | Class 2 | Class 3 | Other (RBD) |
|---|---|---|---|---|---|
| Britain | Alpha | - | - | - | N501Y |
| South Africa | Beta | K417N | E484K | - | N501Y |
| Brazil (P1) | Gamma | K417T | E484K | - | N501Y |
| India | Delta | - | - | L452R | T478K |
| Nepal | Delta + | K417N | - | L452R | T478K |
| California | Epsilon | - | - | L452R | - |
| New York | Iota | - | E484K | - | S477N |
| Peru | Lambda | - | F490S | F490S L452Q | - |
| South Africa | Omicron | K417N | E484A Q493K | G446S | N501Y |

Swiss Policy Research (November 2021), based on Greaney et al. (2021)

Coronavirus variants: Escape from antibody classes 1 to 3 (SPR, based on Greaney et al.) Example: K417N describes an amino acid change at codon position 417 from lysine (K) to asparagine

(N).

### See also

- Omicron hits the mutation jackpot
- The return of the flu
- Coronavirus origins

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