**Supplementary Table 3: Univariable and Multivariable analyses of the relationship between sociodemographic, health and vaccine-related variables and Omicron-BQ.1 specific SARS-CoV-2 neutralization one month following a fourth COVID-19 vaccine dose**

|  |  |
| --- | --- |
| Variable | Log2 viral neutralization against Omicron BQ.1a |
| Univariable analysisb | Multivariable analysisd |
| Estimate | 95% CI | p-value | Estimate | 95% CI | p-value |
| Recent CD4+ T-cell count | 0.0008 | -0.0007 to 0.002 | 0.29 | - | - | - |
| Nadir CD4+ T-cell count | 0.001 | 0.00004 to 0.003 | **0.04** | 0.0006 | -0.0008 to 0.0021 | 0.38 |
| Age | -0.03 | -0.059 to -0.002 | **0.03** | 0.0009 | -0.032 to 0.034 | 0.96 |
| Male sex | -0.59 | -1.64 to 0.46 | 0.26 | - | - | - |
| White ethnicity | -0.12 | -0.96 to 0.71 | 0.77 | - | - | - |
| Number of chronic conditions | -0.24 | -0.68 to 0.20 | 0.28 | - | - | - |
| Dual ChAdOx1 as initial regimen | 1.05 | -0.18 to 2.30 | **0.09** | 0.38 | -0.72 to 1.49 | 0.49 |
| Days between first and second vaccine doses | -0.02 | -0.053 to 0.023 | 0.42 | - | - | - |
| mRNA-1273 as third dose | -0.14 | -0.93 to 0.65 | 0.72 | - | - | - |
| Days between second and third vaccine doses | 0.01 | 0.0016 to 0.023 | **0.03** | 0.01 | 0.0019 to 0.025 | **0.02** |
| mRNA-1273 as fourth dose | 0.30 | -0.52 to 1.12 | 0.47 | - | - | - |
| Bivalent fourth dose | 0.81 | 0.096 to 1.53 | **0.03** | -0.63 | -1.69 to 0.44 | 0.24 |
| Days between third and fourth vaccine doses | 0.01 | 0.0020 to 0.018 | **0.01** | 0.01 | 0.0036 to 0.027 | **0.01** |
| Prior SARS-CoV-2 infection (any)c | 1.68 | 0.99 to 2.36 | **<0.0001** | 1.33 | 0.63 to 2.02 | **0.0003** |
| Prior SARS-CoV-2 Omicron infectionc  | 1.00 | 0.31 to 1.70 | 0.006 | - | - | - |

a Neutralization data (reciprocal plasma dilutions) were log2 transformed prior to multivariable analysis.

b All variables with p<0.1 in univariable analyses were included in the multivariable model.

c As these two "prior SARS-CoV-2" variables are collinear, only the one with the lowest p-value is included in the multivariable model

d We tested for multicollinearity between all other variables using Variance Inflation Factors (VIF). A VIF of 1 indicates that there is no correlation between a given independent variable and any others; VIFs between 1 and 5 suggest moderate correlation, while VIFs greater than 5 represent strong correlation. VIFs in the present model ranged from 1.1 to 3.2.