

Supplementary materials

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Supplementary Table 1. Severe Covid-19 outcomes by variant and time period.

| | N ^a | Admission ^b | Oxygen ^c | Ventilation ^c | Death ^c |
|--------------------|----------------|------------------------|---------------------|--------------------------|--------------------|
| <u>Variant</u> | | | | | |
| Delta | 16 | 5 (31) | 3 (19) | 2 (13) | 2 (13) |
| Omicron | 198 | 41 (21) | 21 (11) | 8 (4) | 6 (3) |
| Unknown | 912 | 114 (13) | 59 (6) | 27 (3) | 20 (2) |
| <u>Time period</u> | | | | | |
| Weeks 1-2 | 151 | 23 (15) | 13 (9) | 4 (3) | 3 (2) |
| Weeks 3-4 | 644 | 98 (15) | 52 (8) | 23 (4) | 17 (3) |
| Weeks 5-6 | 331 | 39 (12) | 18 (5) | 10 (3) | 8 (2) |

Data are number (%) within subgroup specified

Clinical outcomes are 'all cause', not specifically due to Covid-19

^aNumber within subgroup

^bWithin 14 days of positive PCR

^cWithin 28 days of positive PCR

Supplementary Table 2. Association of vaccination with severe Covid-19 outcomes in subgroups with SARS-CoV-2 infection.

| Subgroup | Vaccinations ^a | Odds ratio (95%CI) for severe Covid-19 outcomes | | | | | | | |
|-----------------------------------|---------------------------|---|--------------------|---------------------|--------------------|--------------------------|--------------------|--------------------|--------------------|
| | | Admission ^b | | Oxygen ^c | | Ventilation ^c | | Death ^c | |
| 65-94 years | Two | 0.66 | (0.29-1.52) | 0.80 | (0.28-2.26) | 1.42 | (0.29-7.06) | 1.19 | (0.29-4.85) |
| | Three | 0.35 | (0.15-0.85) | 0.33 | (0.11-1.02) | 0.57 | (0.10-3.13) | 0.76 | (0.18-3.25) |
| | Three (ref Two) | 0.54 | (0.29-0.98) | 0.42 | (0.20-0.89) | 0.40 | (0.14-1.11) | 0.64 | (0.26-1.56) |
| 19-64 years | Two | 0.52 | (0.29-0.94) | 0.57 | (0.26-1.23) | 0.83 | (0.31-2.19) | 0.90 | (0.31-2.58) |
| | Three | 0.22 | (0.11-0.47) | 0.53 | (0.23-1.23) | 0.66 | (0.23-1.92) | 0.75 | (0.24-2.35) |
| | Three (ref Two) | 0.42 | (0.21-0.84) | 0.94 | (0.43-2.05) | 0.79 | (0.31-2.04) | 0.83 | (0.31-2.24) |
| Immune suppression ^d | Two | 0.44 | (0.14-1.35) | 0.28 | (0.05-1.46) | 0.52 | (0.09-2.83) | 0.67 | (0.09-4.80) |
| | Three | 0.23 | (0.07-0.79) | 0.42 | (0.09-2.04) | 0.48 | (0.08-2.85) | 0.62 | (0.08-4.72) |
| | Three (ref Two) | 0.53 | (0.20-1.38) | 1.50 | (0.42-5.37) | 0.93 | (0.22-3.93) | 0.92 | (0.19-4.46) |
| <u>Two vaccines^e</u> | <u>Months since</u> | <u>1.30</u> | <u>(1.17-1.44)</u> | <u>1.45</u> | <u>(1.22-1.73)</u> | <u>1.09</u> | <u>(0.98-1.22)</u> | <u>1.09</u> | <u>(0.97-1.23)</u> |
| <u>Three vaccines^f</u> | <u>Months since</u> | <u>0.87</u> | <u>(0.60-1.26)</u> | <u>1.05</u> | <u>(0.73-1.49)</u> | <u>0.99</u> | <u>(0.62-1.59)</u> | <u>0.99</u> | <u>(0.61-1.61)</u> |

Odds ratio (95% CI), including variables in Table 2, within subgroup comparing vaccination ~~groups~~ by group or time since last dose

Clinical outcomes are 'all cause', not specifically due to Covid-19

Vaccination status considered to change after the 7th post dose day

^aReference none (unvaccinated) except where stated

^bWithin 14 days of positive PCR

^cWithin 28 days of positive PCR

^dAny immune suppression treatment including steroids, tacrolimus, mycophenolate, azathioprine, cytotoxic and biologic agents

^eTime since last vaccine dose, in two-dose subgroup only

^fTime since last vaccine dose, in three-dose subgroup only

Supplementary Table 3. Association of vaccination with severe Covid-19 outcomes in sensitivity analyses.

| Condition | Vaccinations ^a | Odds ratio (95%CI) for severe Covid-19 outcomes | | | | | | | |
|---------------------------|---------------------------|---|--------------------|---------------------|--------------------|--------------------------|-------------|--------------------|-------------|
| | | Admission ^b | | Oxygen ^c | | Ventilation ^c | | Death ^c | |
| Prior SARS-CoV-2 excluded | Two | 0.53 | (0.32-0.88) | 0.53 | (0.27-1.06) | 1.04 | (0.43-2.54) | 1.06 | (0.41-2.71) |
| | Three | 0.25 | (0.14-0.44) | 0.30 | (0.14-0.65) | 0.68 | (0.26-1.76) | 0.75 | (0.28-2.04) |
| Weeks 1-2 only | Two | 0.63 | (0.18-2.24) | 0.69 | (0.17-2.73) | 1.03 | (0.14-7.31) | 0.77 | (0.10-6.10) |
| | Three | 0.19 | (0.04-0.95) | 0.36 | (0.07-1.89) | 0.78 | (0.08-7.42) | 0.71 | (0.07-7.04) |
| Weeks 3-4 only | Two | 0.80 | (0.44-1.46) | 0.91 | (0.42-1.95) | 1.26 | (0.45-3.57) | 1.29 | (0.43-3.89) |
| | Three | 0.34 | (0.17-0.67) | 0.56 | (0.24-1.27) | 0.92 | (0.31-2.75) | 0.94 | (0.29-3.01) |
| Weeks 4-6 only | Two | 0.27 | (0.10-0.74) | 0.18 | (0.03-1.06) | 0.53 | (0.13-2.13) | 0.21 | (0.02-2.25) |
| | Three | 0.25 | (0.09-0.70) | 0.16 | (0.03-1.07) | 0.31 | (0.07-1.41) | 0.08 | (0.01-1.55) |

Odds ratio (95% CI), including variables in Table 2, comparing vaccination groups, under condition specified

Clinical outcomes are 'all cause', not specifically due to Covid-19

Vaccination status considered to change after the 7th post dose day

^aReference none (unvaccinated)

^bWithin 14 days of positive PCR

^cWithin 28 days of positive PCR