### Supplementary Material

### Table S1. Severity grading scale for local reactions and systemic events.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Mild** | **Moderate** | **Severe** |
| Local reaction |  |  |  |
| Pain | Does not interfere with activity | Interferes with activity | Prevents daily activity |
| Redness | >2.0–5.0 cm | >5.0–10.0 cm | >10 cm |
| Swelling | >2.0–5.0 cm | >5.0–10.0 cm | >10 cm |
| Systemic event |  |  |  |
| Vomiting | 1–2 × in 24 h | >2 × in 24 h | Requires IV hydration |
| Diarrhea | 2–3 loose stools in 24 h | 4–5 loose stools in 24 h | ≥6 loose stools in 24 h |
| Headache | Does not interfere with activity | Some interference with activity | Prevents daily routine activity |
| Fatigue | Does not interfere with activity | Some interference with activity | Prevents daily routine activity |
| Chills | Does not interfere with activity | Some interference with activity | Prevents daily routine activity |
| Muscle pain | Does not interfere with activity | Some interference with activity | Prevents daily routine activity |
| Joint pain | Does not interfere with activity | Some interference with activity | Prevents daily routine activity |

IV=intravenous.

For the fever scale, refer to the key of **Figure 3**.

### Table S2. Participant demographics of the variant neutralization subset

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Current study:**  **XBB.1.5-adapted BNT162b2 30 μg** | | | **Comparator group:**  **BA.4/BA.5-adapted BNT162b2 30 μg** | | |
|  | **18–55 years old**  **(Na=20)** | **>55 years old**  **(Na=20)** | **Total (Na=40)** | **18–55 years old**  **(Na=20)** | **>55 years old**  **(Na=20)** | **Total (Na=40)** |
| Sex, nb (%) |  |  |  |  |  |  |
| Male | 12 (60.0) | 7 (35.0) | 19 (47.5) | 12 (60.0) | 7 (35.0) | 19 (47.5) |
| Female | 8 (40.0) | 13 (65.0) | 21 (52.5) | 8 (40.0) | 13 (65.0) | 21 (52.5) |
| Race, nb (%) |  |  |  |  |  |  |
| White | 18 (90.0) | 16 (80.0) | 34 (85.0) | 17 (85.0) | 16 (80.0) | 33 (82.5) |
| Black or African American | 2 (10.0) | 2 (10.0) | 4 (10.0) | 1 (5.0) | 3 (15.0) | 4 (10.0) |
| Other | 0 | 2 (10.0) | 2 (5.0) | 1 (5.0) | 1 (5.0) | 2 (5.0) |
| Ethnicity, nb (%) |  |  |  |  |  |  |
| Hispanic/Latino | 9 (45.0) | 4 (20.0) | 13 (32.5) | 3 (15.0) | 4 (20.0) | 7 (17.5) |
| Age at vaccination (years) |  |  |  |  |  |  |
| Mean (SD) | 38.0 (10.04) | 70.1 (6.51) | 54.0 (18.30) | 37.9 (9.97) | 69.7 (5.95) | 53.8 (18.00) |
| Median (range) | 35.5 (25–55) | 69.5 (56–82) | 55.5 (25–82) | 36.0 (25–54) | 69.5 (56–81) | 55.0 (25–81) |
| Baseline SARS-CoV-2 status, nb (%) |  |  |  |  |  |  |
| Positivec | 20 (100.0) | 20 (100.0) | 40 (100.0) | 20 (100.0) | 20 (100.0) | 40 (100.0) |
| Time from last dose of mRNA COVID-19 vaccined to the study vaccination (monthse) |  |  |  |  |  |  |
| Mean (SD) | 8.8 (1.98) | 9.6 (2.04) | 9.2 (2.03) | 11.0 (1.41) | 11.4 (1.16) | 11.2 (1.29) |
| Median (range) | 8.3 (5.8–12.0) | 10.2 (5.8–11.9) | 9.5 (5.8–12.0) | 11.3 (7.4–12.8) | 11.9 (8.5–12.6) | 11.4 (7.4–12.8) |
| ≥5 to <7 months, nb (%) | 4 (20.0) | 4 (20.0) | 8 (20.0) | 0 | 0 | 0 |
| ≥7 to <9 months, nb (%) | 7 (35.0) | 2 (10.0) | 9 (22.5) | 3 (15.0) | 1 (5.0) | 4 (10.0) |
| ≥9 to ≤12 months, nb (%) | 9 (45.0) | 14 (70.0) | 23 (57.5) | 13 (65.0) | 10 (50.0) | 23 (57.5) |
| >12 months, nb (%) | 0 | 0 | 0 | 4 (20.0) | 9 (45.0) | 13 (32.5) |
| Time from last dose of mRNA COVID-19 vaccine to study vaccination (days) |  |  |  |  |  |  |
| Mean (SD) | 245.7 (55.35) | 269.5 (57.01) | 257.6 (56.75) | 306.7 (39.39) | 318.8 (32.39) | 312.7 (36.12) |
| Median (range) | 233.5 (162–336) | 285.0 (162–333) | 265.5 (162–336) | 317.0 (207–359) | 334.5 (239–354) | 320.5 (207–359) |
| BMI, nb (%) |  |  |  |  |  |  |
| Underweight (<18.5 kg/m2) | 0 | 1 (5.0) | 1 (2.5) | 0 | 0 | 0 |
| Normal weight (≥18.5–24.9 kg/m2) | 6 (30.0) | 6 (30.0) | 12 (30.0) | 5 (25.0) | 3 (15.0) | 8 (20.0) |
| Overweight (≥25.0–29.9 kg/m2) | 9 (45.0) | 7 (35.0) | 16 (40.0) | 8 (40.0) | 12 (60.0) | 20 (50.0) |
| Obese (≥30.0 kg/m2) | 5 (25.0) | 6 (30.0) | 11 (27.5) | 7 (35.0) | 5 (25.0) | 12 (30.0) |

Data are for the all-available immunogenicity population. Data for BA.4/BA.5-adapted BNT162b2 are in a comparator group of participants from another study (NCT05472038) who were matched by age, and baseline SARS-CoV-2 status.

BMI=body mass index; NAAT=nucleic acid amplification test; N-binding=SARS-CoV-2 nucleoprotein–binding; SARS-CoV-2=severe acute respiratory syndrome coronavirus 2; SD=standard deviation.

aN was the number of participants in the specified group, or the total sample; this value was the denominator for the percentage calculations.

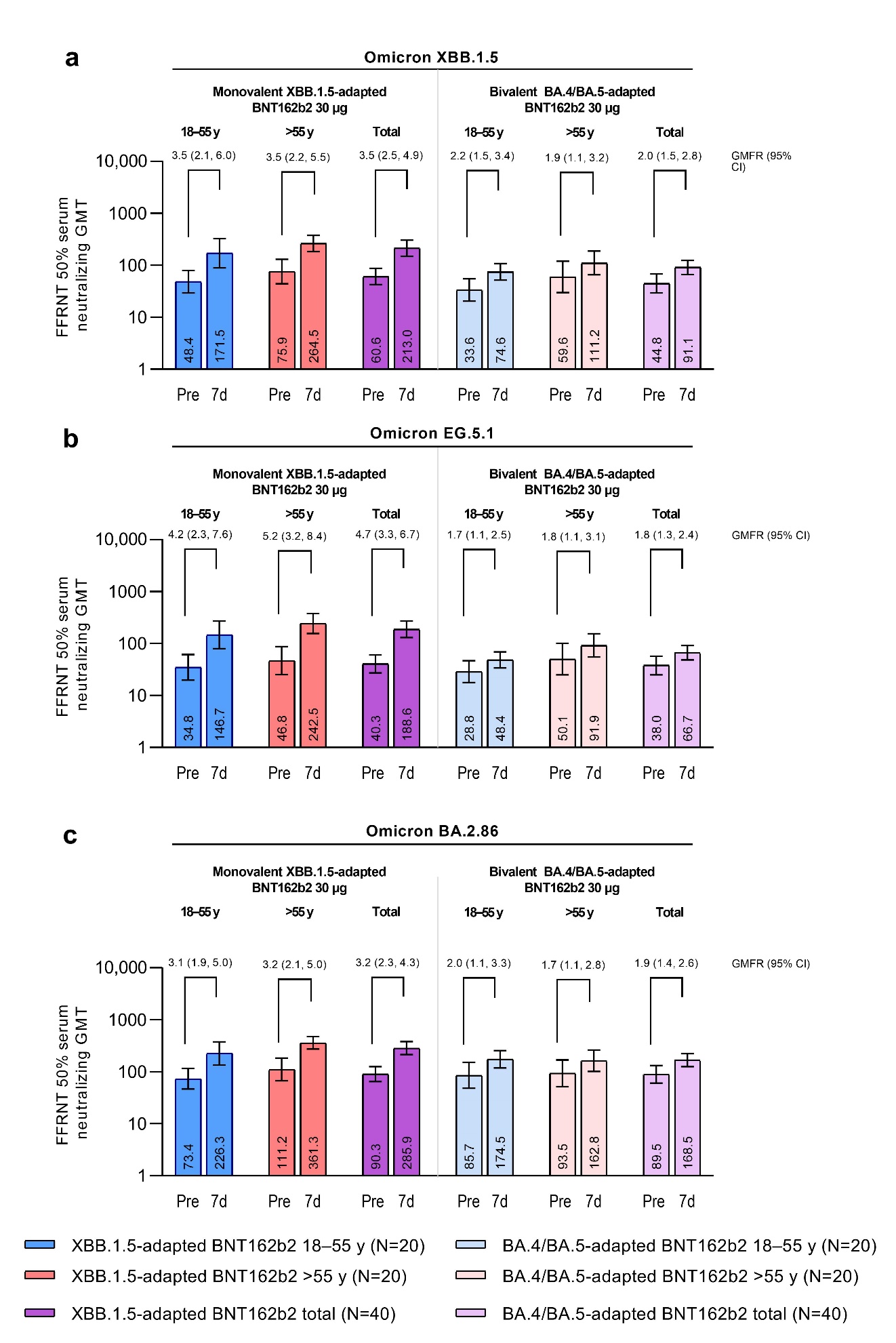
bn was the number of participants with the specified characteristic.

cPositive N-binding antibody result at baseline, positive NAAT result at baseline, or medical history of COVID-19.

d The inclusion criteria required the participant to have received: ≥3 prior doses of a US-authorized mRNA COVID-19 vaccine with the most recent dose being a US-authorized Omicron BA.4/BA.5–adapted vaccine ≥150 days before study vaccination (current study); 3 or 4 prior doses of 30 μg BNT162b2 with the last dose being 150–365 days before study vaccination (comparator group).

eMonth was calculated as 28 days.

**Figure S1.** Serum neutralizingGMTs (95% CIs) before and 7 days after vaccination with XBB.1.5-adapted BNT162b2 30 μg or BA.4/BA.5-adapted BNT162b2 30 μg and GMFRs (95% CIs) from before to 1 week after vaccination to Omicron XBB.1.5 (**a**), EG.5.1 (**b**), and BA.2.86 (**c**). Data for BA.4/BA.5-adapted BNT162b2 are in participants from another study (NCT05472038) who were matched by age, sex, and baseline SARS-CoV-2 status. Data are for the all-available immunogenicity population. Assay results <LLOQ were set to 0.5 × LLOQ. Numbers within the bars are the GMTs. 7d=7 days after vaccination; FFRNT=fluorescent focus reduction neutralization test; GMFR=geometric mean fold rise; GMT=geometric mean titer; LLOQ=lower limit of quantitation; Pre=before vaccination.



**Figure S2.** Percentage of participants achieving seroresponse (95% CIs) 1 week after vaccination with XBB.1.5-adapted BNT162b2 30 μg or BA.4/BA.5-adapted BNT162b2 30 μg to Omicron XBB.1.5 (**a**), EG.5.1 (**b**), and BA.2.86 (**c**). Data for BA.4/BA.5-adapted BNT162b2 are in participants from another study (NCT05472038) who were matched by age, sex, and baseline SARS-CoV-2 status. Data are for the all-available immunogenicity population. Seroresponse was defined as achieving a ≥4-fold rise from before study vaccination in FFRNT 50% serum neutralizing titers. If the baseline measurement was <LLOQ, a postvaccination assay result ≥4 × LLOQ was considered a seroresponse. Numbers above the bars are percentages rounded to the nearest full number. FFRNT=fluorescent focus reduction neutralization test; LLOQ=lower limit of quantitation.

