

	Bivalent HCWs (n=14)	3-dose HCWs (n=15)	XBB.1.5-Wave Patients (n=11)
Age in Years at Sample Collection [Median (Range)]	36 (25-48)	33 (26-61)	53 (36-75)
Gender [n (% of Total)]			
Male	8 (57.1%)	10 (66.7%)	7 (63.6%)
Female	6 (42.9%)	5 (33.3%)	4 (36.4%)
Sample Collection Window	Dec. 2022- early Jan. 2023	Aug. 2021- Feb. 2022	Feb. 2023- July. 2023
Vaccine status [n (% of Total)]			
Unvaccinated	na	na	3 (27.3%)
2-dose Janseen	na	na	1 (9.1%)
2-dose Moderna	na	na	1 (9.1%)
3-dose Moderna	na	3 (20%)	1 (9.1%)
3-dose Pfizer	na	12 (80%)	2 (18.2%)
2-dose Pfizer+1-dose Pfizer bivalent	1 (7.1%)	na	na
3-dose Moderna+1-dose Moderna bivalent	12 (85.8%)	na	1 (9.1%)
4-dose Moderna+1-dose Pfizer bivalent	1 (7.1%)	na	2 (18.2%)
Sample Collection Timing [Median (Range)]			
Days post 3 rd dose for Recipients of three doses	na	40 (14-86)	na
Days post the bivalent dose for Recipients	66 (23-108)	na	na
COVID-19 positive [n (% of Total)]	10 (71.4%)	0 (0 %)	(100 %)
Days before sample collection [Median (Range)]	254 (50-994)	na	na
Infected Variants			
XBB1.5	na	na	8 (73%)
Undermined	na	na	3 (27%)

Table S1: Demographic and sample collection information of vaccinated HCWs and XBB.1.5-Wave COVID-19 positive patients, related to Figure 2 and Figure S1.

Summary of serum sample information for HCWs that received 1 dose of the Pfizer or Moderna bivalent mRNA vaccine and for HCW who received 3 doses of monovalent mRNA vaccines. 3 of the 10 HCWs who had received the bivalent booster were infected by SARS-CoV-2 before the Omicron wave, whereas the left 7 were positive during the Omicron wave (6 infected about 5 months before and 1 infected around 1 month after the bivalent vaccination). Summary information for the XBB.1.5-Wave infected patients in Columbus, Ohio is also provided. na means “not applicable”.

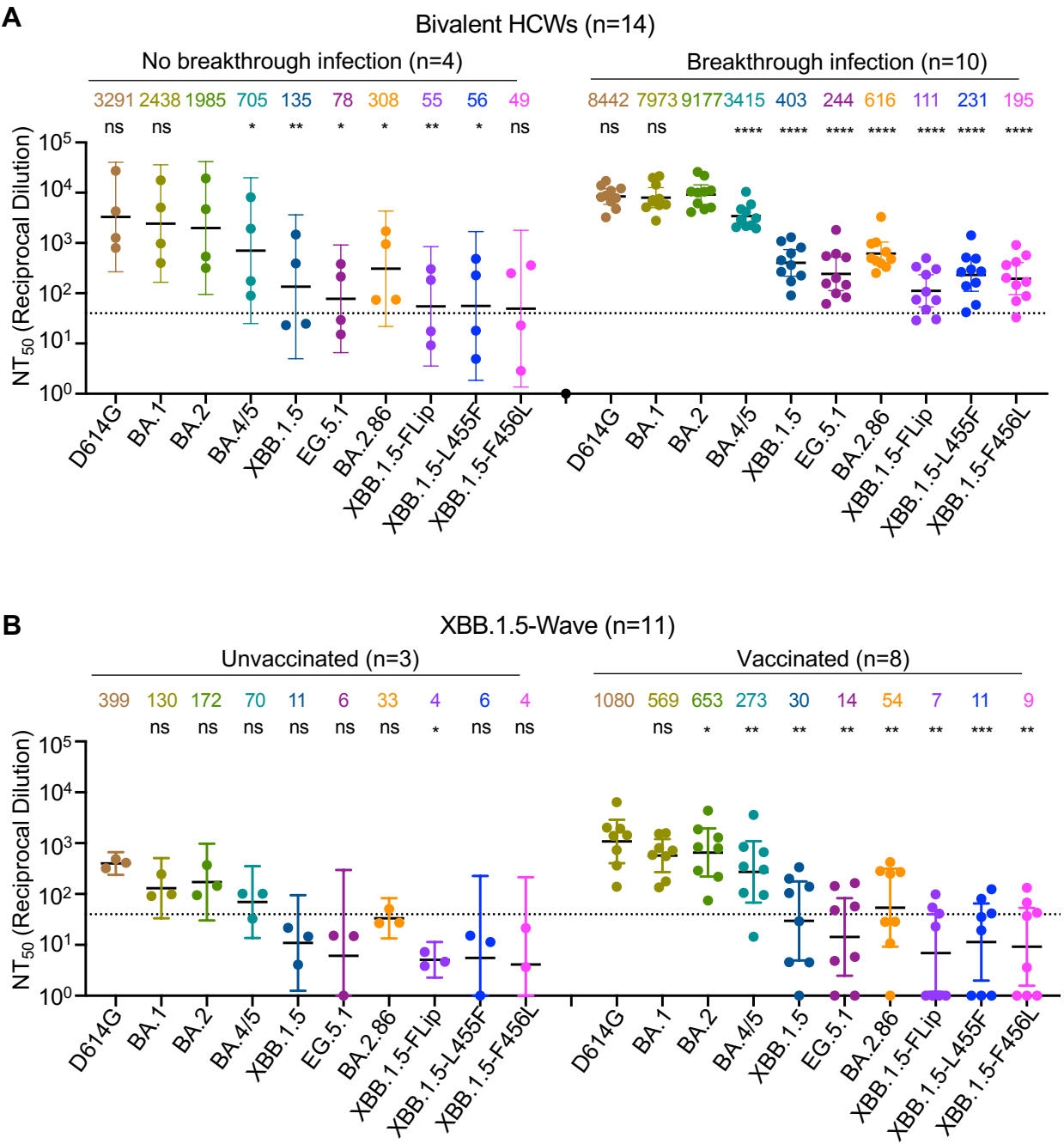


Figure S1: Subgroup analyses of neutralization. (A) NT₅₀ data shown in Figure 2A for bivalent HCWs sera were reanalyzed based on the HCWs' COVID-19 status, including no breakthrough infection (n = 4) and breakthrough infection (n = 10). (B) NT₅₀ data shown in Figure 2C for XBB.1.5-Wave sera is replotted by separating the vaccination status, i.e., Unvaccinated (n = 3) vs. Vaccinated (n = 8). Bars represent geometric means with 95% confidence intervals. Geometric mean NT₅₀ values are displayed on the top. Dashed lines represent the threshold of detection, i.e., NT50 of 40. P values are displayed as ns p > 0.05, *p < 0.05, **p < 0.01, ***p < 0.001, and ****p < 0.0001. Significance was determined by one-way repeated measures ANOVA using Bonferroni's multiple testing correction to make comparisons between multiple groups.

Figure S1