Real-World Comparative COVID-19 Vaccine Effectiveness of a Third Dose of mRNA-1273 Versus BNT162b2 Among Immunocompromised Adults in the United States

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SUPPLEMENTARY MATERIAL

Supplementary Information

Supplementary Table 1. Identification Criteria[a] for Immunocompromised Participants

		Time (Days) Before the Index Day[b] (Day 0)			
Criteria	**Any**	**60**	**180**	**365**	**730**
Evidence of blood or stem cell transplant					×
History of organ transplant and receipt of immunosuppressive therapy		×			
Any immunosuppressive therapy		×			
Evidence of active cancer treatment			×		
Active cancer diagnosis[c]				×	
History of immunodeficiency disorder[d]	×				
History of HIV diagnosis[e]	×				

[a]Participants were identified as immunocompromised if at least one of the criteria were met.
[b]Index day was defined as the day when study participants received a third dose of COVID-19 vaccine, either mRNA-1273 or BNT162b2.
[c]365 days before treatment.
[d]Any prior history was considered; conditions such as DiGeorge syndrome and Wiskott-Aldrich syndrome.
[e]Any history of an HIV diagnosis code before the index day was considered.

Supplementary Table 2. Baseline Characteristics of Immunocompromised Adults With a Third Dose of BNT162b2 or mRNA-1273

	BNT162b n = 60,084	mRNA-1273 n = 52,943	ASD Before Weighting	ASD After Weighting
Age				
Mean (SD), years	52.30 (13.44)	53.57 (13.14)	0.096	0
Median [IQR]	55.00 [44.00, 62.00]	56.00 [46.00, 62.00]		
Age categorization, n (%)				
18-29 years	4310 (7.2%)	2987 (5.6%)	0.063	0.004
30-39 years	6587 (11.0%)	5423 (10.2%)	0.023	0.019
40-49 years	10,122 (16.8%)	8459 (16.0%)	0.023	0.003
50-64 years	31,987 (53.2%)	28,633 (54.1%)	0.017	0.024
65-74 years	5395 (9.0%)	5623 (10.6%)	0.055	0.024
≥75 years	1683 (2.8%)	1818 (3.4%)	0.036	0.006
Sex, n (%)				
Female	32,711 (54.4%)	28,339 (53.5%)	0.018	0.000
Male	27,373 (45.6%)	24,604 (46.5%)	0.018	0.000
Primary payer type, n (%)				
Commercial	39,064 (65.0%)	33,732 (63.7%)	0.027	0.000
Medicare	2443 (4.1%)	2899 (5.5%)	0.066	0.005
Medicaid	17,382 (28.9%)	15,468 (29.2%)	0.006	0.000
Missing	1195 (2.0%)	844 (1.6%)	0.03	0.000
United States region, n (%)				
Northeast	10,670 (17.8%)	9012 (17.0%)	0.019	0.000
Midwest	22,413 (37.3%)	17,631 (33.3%)	0.084	0.000
South	15,961 (26.6%)	14,096 (26.6%)	0.001	0.002
West	11,040 (18.4%)	12,204 (23.1%)	0.116	0.002
Count of hospitalization events, 365 days				
Mean (SD)	1.71 (7.68)	1.61 (7.39)	0.013	0
Count of outpatient events, 365 days				
Mean (SD)	38.29 (53.74)	38.67 (55.99)	0.007	0
Median [IQR]	23.00 [13.00, 41.00]	22.00 [13.00, 41.00]		
Baseline Charlson comorbidity score, n (%)				
0	16,869 (28.1%)	14,186 (26.8%)	0.029	0.000
1	12,135 (20.2%)	10,490 (19.8%)	0.01	0.002
2	31,080 (51.7%)	28,267 (53.4%)	0.033	0.000
Baseline frailty score, n (%)				
Robust (0-0.149)	41,249 (68.7%)	35,714 (67.5%)	0.026	0.000
Prefrail (0.15-0.249)	16,730 (27.8%)	15,336 (29.0%)	0.025	0.000
Mild (0.25-0.349)	1821 (3.0%)	1677 (3.2%)	0.008	0.000
Moderate to severe (≥0.35)	284 (0.5%)	216 (0.4%)	0.01	0.000
Number of unique immunosuppressive medications, mean (SD)	0.95 (1.01)	0.93 (1.00)	0.02	0
Medically attended COVID-19 diagnosis 6 months before the third dose, n (%)	3763 (6.3%)	2877 (5.4%)	0.035	0.000

ASD, absolute standardized difference; CI, confidence interval; IQR, interquartile range; SD, standard deviation.

Supplementary Table 3. Descriptive Statistics of Immunocompromised Adults With a Third Dose of mRNA-1273 or BNT162b2

	Crude descriptive statistics	BNT162b n = 60,084	mRNA-1273 n = 52,943
COVID-19 hospitalization	Number of person-years	34,251	29,402
	Number of events	342	232
	Rate per 1000 person-years (95% CI)	9.99 (8.93-11.04)	7.89 (6.88-8.91)
	Median follow-up time (days) [IQR]	220 [157-267]	217 [150-258]
Medically attended COVID-19	Number of person-years	32,395	27,970
	Number of events	5784	4656
	Rate per 1000 person-years (95% CI)	178.54 (173.94-183.15)	166.46 (161.68-171.25)
	Median follow-up time (days) [IQR]	211 [139-258]	209 [138-253]

CI, confidence interval; IQR, interquartile range.

Supplementary Table 4. Incidence Rate (per 1000 TPYs; 95% CI) of Medically Attended COVID-19 and Inpatient COVID-19 Among Prespecified Subgroups

Subgroups	Endpoints	BNT162b Incidence Rate (95% CI)	mRNA-1273 Incidence Rate (95% CI)
Age ≥65 years	COVID-19 hospitalization	18.925 (14.613-23.237)	13.664 (9.914-17.415)
	Medically attended COVID-19	160.625 (147.783-173.467)	142.993 (130.631-155.355)
Without COVID-19 infection within 6 month before the index day	COVID-19 hospitalization	9.691 (8.619-10.763)	7.646 (6.621-8.670)
	Medically attended COVID-19	172.183 (167.542-176.823)	160.148 (155.347-164.950)
Primary immunodeficiency	COVID-19 hospitalization	8.177 (6.174-10.181)	6.501 (4.622-8.379)
	Medically attended COVID-19	141.818 (133.297-150.340)	139.523 (130.636-148.409)
Active cancer treatment	COVID-19 hospitalization	8.930 (6.013-11.847)	4.880 (2.560-7.200)
	Medically attended COVID-19	159.462 (146.838-172.085)	140.282 (127.586-152.978)
History of HIV diagnosis	COVID-19 hospitalization	6.255 (4.182-8.327)	5.312 (3.308-7.315)
	Medically attended COVID-19	129.242 (119.633-138.851)	135.177 (124.864-145.490)

CI, confidence interval; TPY, thousand person-year.

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