

Supplementary Table 1: Definition of medical conditions (highly) predisposing to severe Covid-19.

Medical condition	Classification	Codes	Register
Highly predisposing to severe Covid-19			
Organ or stem cell transplant	ICD-10	T86, Z94	1, 2
Active cancer treatment	ICD-10	C00–C97 (except C44), D05.1, D39	1, 2
Severe disorders of the immune system	ICD-10	D70.8, D80–D84, E31.00	2
Severe chronic renal disease	ICD-10	I12, I13, N00–N05, N07, N08, N11, N14, N18, N19, E10.2, E11.2, E14.2	1, 2
Asthma requiring continuous medication	ICD-10	J45, J46	2, 3
	ICPC-2	R96	3
Severe chronic pulmonary disease	ICD-10	J41–J44, J47, Z90.2	2
Type 2 diabetes mellitus requiring medication	ICD-10	E11, E13, E14	2, 3
	ICPC-2	T90	3
Blood glucose lowering drugs, excluding insulin	ATC	A10B	4
Down syndrome	ICD-10	Q90	2, 3
Predisposing to severe Covid-19			
Severe heart disease	ICD-10	I11–I13, I15, I20–I25, I50	1, 2
Neurological illness or condition that affects breathing	ICD-10	G70-G73, G80–G83, I60–I69	2
Immunosuppressive drug therapy for autoimmune disease			
Autoimmune disease	ICD-10	D86, K50, K51, L40, M02, M05–M07, M13.9, M45, M46.0, M46.1, M46.9, M94.1	1, 2
Immunosuppressive drug therapy	ATC	H02AB02, H02AB04, H02AB06, H02AB07, L01BA01, L01XC02, L04AA06, L04AA10, L04AA13, L04AA18, L04AA24, L04AA26, L04AA29, L04AA33, L04AA37, L04AB, L04AC, L04AD01, L04AD02, L04AX01, L04AX03	4
Severe chronic liver disease	ICD-10	K70.2, K70.3, K70.4, K71–K74	2
Type 1 diabetes	ICD-10	E10	2, 3
	ICPC-2	T89	3
Insulin and analogues	ATC	A10A	4
Adrenal insufficiency	ICD-10	E25.0, E27.1, E27.2, E27.4, E31.00, E31.01, E31.08, E89.6	1, 2
Sleep apnea	ICD-10	G47.3	2, 3
Continuous positive airway pressure therapy	NCSP	WX723, WX780	2
Psychotic disorders	ICD-10	F20–F29	2, 3
	ICPC-2	P72	3
Clozapine	ATC	N05AH02	4

ATC, Anatomical Therapeutic Chemical Classification System; ICD-10, International Statistical Classification of Diseases and Related Health Problems, tenth revision; ICPC-2, International Classification of Primary Care, second edition; NCSP, Nordic Nomesco Classification of Surgical Procedures.

Registers: 1, Special Reimbursement Register for Medicine Expenses; 2, Care Register for Health Care; 3, Register of Primary Health Care Visits; 4, Prescription Centre database.

Supplementary Table 2: Vaccine effectiveness against laboratory-confirmed SARS-CoV-2 infection in healthcare workers.

	Main analysis					Sensitivity analysis									
	27 Dec 2020 – 26 Aug 2021					27 Dec 2020 – 20 Jun 2021 (Pre-Delta)				21 Jun 2021 – 26 Aug 2021 (Delta)					
	Cases	AR	VE	CI95%		Cases	AR	VE	CI95%	Cases	AR	VE	CI95%		
Not vaccinated	3874	2066	Reference			3287	1086	Reference			587	991	Reference		
AdV vaccine (0-20 DSV)	43	310	36	14	53	43	310	36	13	53	0	0	100	NE	NE
AdV vaccine (21-41 DSV)	48	402	7	-24	30	48	402	6	-26	29	0	0	100	NE	NE
AdV vaccine (42+ DSV)	50	7144	22	-3	42	44	6877	15	-15	37	6	287	49	-16	77
AdV vaccine + AdV vaccine (0-13 DSV)	< 5	112	65	-40	91	< 5	88	-16	-727	84	< 5	25	79	-51	97
AdV vaccine + AdV vaccine (14-90 DSV)	5	37	89	73	95	0	0	100	NE	NE	5	37	88	71	95
AdV vaccine + AdV vaccine (91-180 DSV)	< 5	38	63	-166	95	0	0	100	NE	NE	< 5	38	62	-177	95
AdV vaccine + AdV vaccine (181+ DSV)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AdV vaccine + mRNA vaccine (0-13 DSV)	7	100	43	-20	73	6	64	27	-65	67	< 5	36	73	-95	96
AdV vaccine + mRNA vaccine (14-90 DSV)	38	144	80	72	86	0	0	100	NE	NE	38	144	80	72	86
AdV vaccine + mRNA vaccine (91-180 DSV)	11	180	62	30	79	0	0	100	NE	NE	11	180	63	33	80
AdV vaccine + mRNA vaccine (181+ DSV)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
mRNA vaccine (0-20 DSV)	283	1779	22	11	31	208	1187	10	-4	22	75	599	46	31	57
mRNA vaccine (21-41 DSV)	184	1015	48	39	55	78	572	40	25	52	106	446	56	46	64
mRNA vaccine (42+ DSV)	542	956	40	34	46	87	458	38	23	50	455	501	45	37	51
mRNA vaccine + mRNA vaccine (0-13 DSV)	110	422	70	64	76	21	177	70	54	81	89	245	71	64	77
mRNA vaccine + mRNA vaccine (14-90 DSV)	162	326	82	79	85	80	209	77	71	82	82	118	85	81	88
mRNA vaccine + mRNA vaccine (91-180 DSV)	168	377	62	55	68	28	100	55	34	69	140	277	65	58	71
mRNA vaccine + mRNA vaccine (181+ DSV)	103	320	53	43	62	-	-	-	-	-	103	320	56	46	65

AR, Attack rate (cumulative risk at the end of the study period estimated based on Kaplan-Meier estimator and multiplied by 10^5); CI, Confidence interval; DSV, Days since vaccination; NE, Not estimated; VE, Vaccine effectiveness.

Supplementary Table 3: Vaccine effectiveness against Covid-19 related hospitalization in healthcare workers.

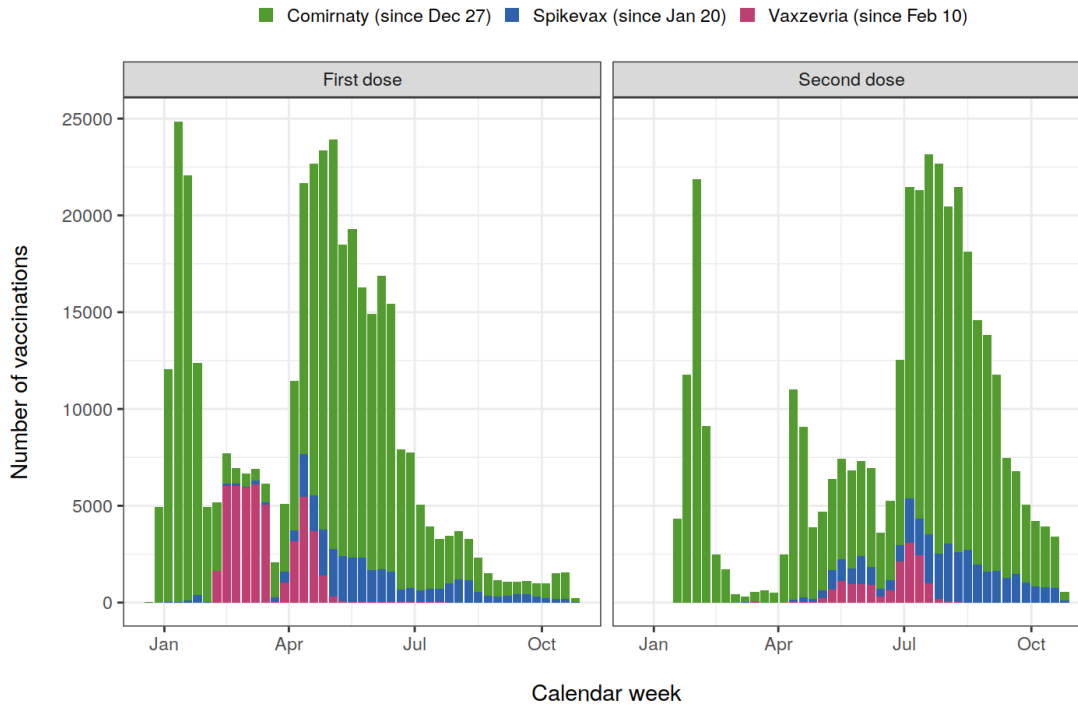
	Main analysis					Sensitivity analysis									
	27 Dec 2020 – 26 Oct 2021					27 Dec 2020 – 20 Jun 2021 (Pre-Delta)					21 Jun 2021 – 26 Oct 2021 (Delta)				
	Cases	AR	VE	CI95%		Cases	AR	VE	CI95%		Cases	AR	VE	CI95%	
Not vaccinated	220	198	Reference			149	51	Reference			71	147	Reference		
AdV vaccine (0-20 DSV)	< 5	11	69	-26	92	< 5	11	70	-22	93	0	0	100	NE	NE
AdV vaccine (21-41 DSV)	7	45	-17	-156	47	7	45	-13	-149	49	0	0	100	NE	NE
AdV vaccine (42+ DSV)	< 5	52	88	10	98	0	0	100	NE	NE	< 5	52	42	-330	92
AdV vaccine + AdV vaccine (0-13 DSV)	0	0	100	NE	NE	0	0	100	NE	NE	0	0	100	NE	NE
AdV vaccine + AdV vaccine (14-90 DSV)	0	0	100	NE	NE	0	0	100	NE	NE	0	0	100	NE	NE
AdV vaccine + AdV vaccine (91-180 DSV)	< 5	28	88	48	97	-	-	-	-	-	< 5	28	81	9	96
AdV vaccine + AdV vaccine (181+ DSV)	0	0	100	NE	NE	-	-	-	-	-	0	0	100	NE	NE
AdV vaccine + mRNA vaccine (0-13 DSV)	0	0	100	NE	NE	0	0	100	NE	NE	0	0	100	NE	NE
AdV vaccine + mRNA vaccine (14-90 DSV)	0	0	100	NE	NE	0	0	100	NE	NE	0	0	100	NE	NE
AdV vaccine + mRNA vaccine (91-180 DSV)	< 5	4	98	83	100	-	-	-	-	-	< 5	4	97	81	100
AdV vaccine + mRNA vaccine (181+ DSV)	0	0	100	NE	NE	-	-	-	-	-	0	0	100	NE	NE
mRNA vaccine (0-20 DSV)	< 5	95	87	58	96	< 5	95	79	31	93	0	0	100	NE	NE
mRNA vaccine (21-41 DSV)	< 5	2	95	67	99	< 5	2	89	15	98	0	0	100	NE	NE
mRNA vaccine (42+ DSV)	13	30	83	70	91	< 5	5	90	27	99	12	25	83	68	91
mRNA vaccine + mRNA vaccine (0-13 DSV)	0	0	100	NE	NE	0	0	100	NE	NE	0	0	100	NE	NE
mRNA vaccine + mRNA vaccine (14-90 DSV)	< 5	2	99	97	100	< 5	2	95	64	99	< 5	1	100	97	100
mRNA vaccine + mRNA vaccine (91-180 DSV)	< 5	3	98	91	99	0	0	100	NE	NE	< 5	3	98	90	99
mRNA vaccine + mRNA vaccine (181+ DSV)	< 5	2	98	89	100	-	-	-	-	-	< 5	2	98	88	100

AR, Attack rate (cumulative risk at the end of the study period estimated based on Kaplan-Meier estimator and multiplied by 10⁵); CI, Confidence interval; DSV, Days since vaccination; NE, Not estimated; VE, Vaccine effectiveness.

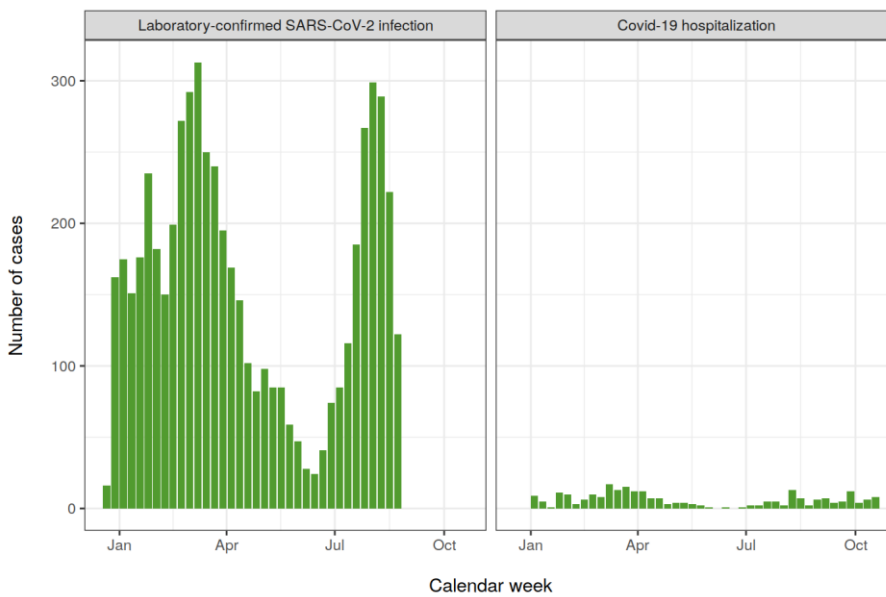
Supplementary Table 4: Brand-specific mRNA vaccine effectiveness against laboratory-confirmed SARS-COV-2 infection and Covid-19 related hospitalization in healthcare workers excluding those vaccinated first with AdV vaccine.

	SARS-CoV-2 infection					Covid-19 related hospitalization				
	27 Dec 2020 – 26 Aug 2021					27 Dec 2020 – 26 Oct 2021				
	Cases	AR	VE	CI95%		Cases	AR	VE	CI95%	
Not vaccinated	3838	2141	Reference			218	201	Reference		
Comirnaty (0-20 DSV)	265	1905	21	11	31	< 5	111	85	54	95
Comirnaty (21-41 DSV)	174	1062	47	38	55	< 5	3	95	63	99
Comirnaty (42+ DSV)	507	985	40	33	46	12	34	82	68	90
Comirnaty + Comirnaty (0-13 DSV)	104	441	71	64	76	0	0	100	-Inf	100
Comirnaty + Comirnaty (14-90 DSV)	154	323	83	80	85	< 5	2	99	97	100
Comirnaty + Comirnaty (91-180 DSV)	167	377	63	56	69	< 5	3	98	91	99
Comirnaty + Comirnaty (181+ DSV)	103	320	55	45	64	< 5	2	98	89	100
Comirnaty + Spikevax (0-13 DSV)	< 5	173	65	-146	95	0	0	100	NE	NE
Comirnaty + Spikevax (14-90 DSV)	0	0	100	NE	NE	0	0	100	NE	NE
Comirnaty + Spikevax (91-180 DSV)	0	0	100	NE	NE	0	0	100	NE	NE
Comirnaty + Spikevax (181+ DSV)	0	0	100	NE	NE	0	0	100	NE	NE
Spikevax (0-20 DSV)	18	551	55	29	72	0	0	100	NE	NE
Spikevax (21-41 DSV)	10	354	72	47	85	0	0	100	NE	NE
Spikevax (42+ DSV)	35	393	61	45	72	< 5	7	89	22	98
Spikevax + Comirnaty (0-13 DSV)	0	0	100	NE	NE	0	0	100	NE	NE
Spikevax + Comirnaty (14-90 DSV)	0	0	100	NE	NE	0	0	100	NE	NE
Spikevax + Comirnaty (91-180 DSV)	0	0	100	NE	NE	0	0	100	NE	NE
Spikevax + Comirnaty (181+ DSV)	0	0	100	NE	NE	0	0	100	NE	NE
Spikevax + Spikevax (0-13 DSV)	5	113	83	60	93	0	0	100	NE	NE
Spikevax + Spikevax (14-90 DSV)	8	322	84	68	92	0	0	100	NE	NE
Spikevax + Spikevax (91-180 DSV)	< 5	179	69	-124	96	0	0	100	NE	NE
Spikevax + Spikevax (181+ DSV)	-	-	-	-	-	0	0	100	NE	NE

AR, Attack rate (cumulative risk at the end of the study period estimated based on Kaplan-Meier estimator and multiplied by 10⁵); CI, Confidence interval; DSV, Days since vaccination; NE, Not estimated; VE, Vaccine effectiveness.



Supplementary Figure 1. Number of vaccinations administered in healthcare workers by calendar week.



Supplementary Figure 2: Number of laboratory-confirmed SARS-CoV-2 infections and Covid-19 related hospitalizations in healthcare workers by calendar week.