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Supplementary appendix 2

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Manuscript title:

Immunogenicity of the BNT162b2 COVID-19 mRNA vaccine and early clinical outcomes in patients with haematological malignancies in Lithuania: a national prospective cohort study

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TABLES

Supplementary Table 1. Abbreviations.

6MP-MTX	6-mercaptopurine, Methotrexate
AA	Aplastic anemia
ABVD	Doxorubicin, Bleomycin, Vinblastine, Dacarbazine
ALC	absolute lymphocyte count
ALL	Acute lymphoblastic leukemia
AML	Acute myeloid leukemia
ANC	absolute neutrophil count
ATO	Arsenic trioxide
ATRA	All-trans retinoic acid
AU/mL	Arbritary units per millilitre
AVD	Doxorubicin, Vinblastine, Dacarbazine
B-NHL	B-Cell Non-Hodgkin lymphoma
BEACOPP	Bleomycin, Etoposide, Doxorubicin, Cyclophosphamide, Vincristine, Procarbazine, Prednisolone
BEAM	Carmustine, Etoposide, Cytarabine, Melphalan
BTK	Bruton's tyrosine kinase
CEL	Chronic Eosinophilic Leukemia
CHOP	Cyclophosphamide, Doxorubicin, Vincristine, Prednisolone
CLL	Chronic lymphocytic leukemia
CML	Chronic myeloid leukemia
CMML	Chronic myelomonocytic leukemia
CONF	confidential
CTD	Cyclophosphamide, Thalidomide, Dexamethasone
CdA	Cladribine
CyBorDex	Cyclophosphamide, Bortezomib, Dexamethasone
DLBCL	Diffuse Large B-Cell Lymphoma
escBEACOPP	BEACOPP, escalated doses
ET	Essential thrombocythemia
FL	Follicular lymphoma

HCM	hydroxycarbamide
HCW	health care workers
HD-MTX	High-dose Methotrexate
HDAraC	High-dose Cytarabine
HGB	hemoglobin
HL	Hodgkin lymphoma
HLH	Hemophagocytic lymphohistiocytosis
HiCHOP	CHOP, escalated doses
IMiDs	Immunomodulatory imide drugs
IRd	Ixazomib, Lenalidomide, Dexamethasone
KRd	Carfilzomib, Lenalidomide, Dexamethasone
Kd	Carfilzomib, Dexamethasone
LDAraC	Low-dose Cytarabine
MAC	myeloablative conditioning
MCL	Mantle cell lymphoma
MCT	Mast cell tumor
MDS	Myelodysplastic syndrome
miniCHOP	CHOP, reduced doses
MM	Multiple myeloma
MMF	Mycophenolate mofetil
MTX	Methotrexate
Obi-Chl	Obinutuzumab, Chlorambucil
PLT	platelet count
PMF	Primary myelofibrosis
PNH	Paroxysmal nocturnal hemoglobinuria
PV	Polycythemia vera
R	Rituximab
R-CD	Rituximab, Cyclophosphamide, Dexamethasone
R-Chl	Rituximab, Chlorambucil
R-Cy	Rituximab, Cyclophosphamide
R-DHAP	Rituximab, Dexamethasone, Cytarabine, Cisplatin

R-FC	Rituximab, Fludarabine, Cyclophosphamide
R-MTX	Rituximab, Methotrexate
R-TEDDI	Rituximab, Temozolomide, Etoposide, Liposomal Doxorubicin (Doxil), Dexamethasone, Ibrutinib
RIC	reduced-intensity conditioning
T-NHL	T-Cell non-Hodgkin lymphoma
TK	Tyrosine kinase
TP	time point
VTd	Bortezomib, Thalidomide, Dexamethasone
WBC	White blood cells

Supplementary Table 2. Baseline characteristics by hematological malignancy and the most recent treatment.

Disease	Treatment	N	Female (%)	Median age, years (range)	Undergoing treatment at the time of vaccination, N (%)	Last treatment <6 months, N (%)	Last treatment 6-12 months, N (%)	Last treatment >12 months, N (%)
ALL	Allogeneic SCT (RIC)	6	5 (83)	53 (48 - 69)	0	0	0	6 (100)
	TK Inhibitors*	4	0 (0)	32 (24 - 53)	3 (75)	0	0	1 (25)
	Allogeneic SCT (MAC)	12	4 (33)	35 (20 - 59)	0	1 (8)	2 (17)	9 (75)
	Anti CD-20 Monotherapy	1	CONF	CONF	1 (100)	0	0	0
	MTX	4	1 (25)	25 (23 - 44)	1 (25)	0	1 (25)	2 (50)
	VCR-Dexa	1	CONF	CONF	1 (100)	0	0	0
	6-mercaptopurine, methotrexate	2	2 (100)	52 (44 - 61)	1 (50)	1 (50)	0	0
AML	Allogeneic SCT (MAC)	26	14 (54)	45 (24 - 65)	0	0	2 (8)	24 (92)
	Allogeneic SCT (RIC)	37	17 (46)	64 (41 - 77)	0	2 (5)	6 (16)	29 (78)
	Ivosidenib/Placebo	2	2 (100)	51 (50 - 52)	2 (100)	0	0	0
	Glasdegib+LDAraC	3	1 (33)	72 (60 - 74)	2 (67)	0	1 (33)	0
	DAC	1	CONF	CONF	0	1 (100)	0	0
	HDAraC	2	2 (100)	64 (64 - 65)	0	2 (100)	0	0
	ATO+ATRA	1	CONF	CONF	0	0	0	1 (100)
	Immunosuppressants#	4	3 (75)	58 (47 - 70)	4 (100)	0	0	0
	Venetoclax +/- Other	4	2 (50)	66 (57 - 82)	4 (100)	0	0	0
	Autologous SCT	3	1 (33)	39 (35 - 71)	0	0	0	3 (100)
	Ruxolitinib	1	CONF	CONF	1 (100)	0	0	0
	TK Inhibitors**	1	CONF	CONF	1 (100)	0	0	0
HLH	Allogeneic SCT (RIC)	1	CONF	CONF	0	1 (100)	0	0
CEL	Immunosuppressants#	1	CONF	CONF	1 (100)	0	0	0
CMML	Untreated	1	CONF	CONF	0	0	0	0
	Hydroxycarbamide	1	CONF	CONF	1 (100)	0	0	0
IgG4 Syndrome	Cyclophosphamide, Prednisolone	1	CONF	CONF	1 (100)	0	0	0
MCT	Cladribine	1	CONF	CONF	1 (100)	0	0	0
CML	TK Inhibitors*	38	10 (26)	55 (22 - 86)	37 (97)	0	0	1 (3)
	Immunosuppressants#	1	CONF	CONF	1 (100)	0	0	0
	Allogeneic SCT (MAC)	6	3 (50)	47 (39 - 56)	0	0	0	6 (100)
	Allogeneic SCT (RIC)	3	3 (100)	60 (53 - 64)	0	0	1 (33)	2 (67)
ET	Hydroxycarbamide	31	23 (74)	70 (37 - 89)	31 (100)	0	0	0
	Anagrelide/Interferon	12	9 (75)	60 (34 - 80)	12 (100)	0	0	0
	Ruxolitinib	1	CONF	CONF	1 (100)	0	0	0
	Busulfan	1	CONF	CONF	1 (100)	0	0	0
	Untreated	1	CONF	CONF	0	0	0	0
MDS	Allogeneic SCT (RIC)	9	5 (56)	66 (35 - 73)	0	1 (11)	0	8 (89)
	Venetoclax +/- Other	1	CONF	CONF	1 (100)	0	0	0
	Allogeneic SCT (MAC)	1	CONF	CONF	0	0	0	1 (100)
	Untreated	12	6 (50)	77 (72 - 85)	0	0	0	0

	IMiDs no Proteasome Inhibitors	1	CONF	CONF	0	0	0	1 (100)
AA	Allogeneic SCT (RIC)	7	2 (29)	56 (30 - 70)	0	0	0	7 (100)
	Allogeneic SCT (MAC)	4	3 (75)	40 (27 - 44)	0	0	0	4 (100)
MM	Autologous SCT	108	59 (55)	66 (46 - 80)	0	6 (6)	14 (13)	88 (81)
	Allogeneic SCT (RIC)	2	0 (0)	50 (41 - 60)	0	0	0	2 (100)
	IMiDs no Proteasome Inhibitors	24	12 (50)	69 (50 - 86)	16 (67)	4 (17)	0	4 (17)
	Proteasome Inhibitors no IMiDs	19	13 (68)	79 (58 - 93)	9 (47)	3 (16)	1 (5)	6 (32)
	IMiDs and Proteasome Inhibitors	35	25 (71)	68 (52 - 81)	26 (75)	1 (3)	2 (6)	6 (17)
	Immunosuppressants#	1	CONF	CONF	0	1 (100)	0	0
	Allogeneic SCT (MAC)	1	CONF	CONF	0	0	0	1 (100)
	Untreated	3	1 (33)	61 (44 - 70)	0	0	0	0
	Anti CD-20 + CHOP***	1	CONF	CONF	0	0	0	1 (100)
	Bendamustine	1	CONF	CONF	0	1 (100)	0	0
	Bendamustine, Dexamethasone	1	CONF	CONF	1 (100)	0	0	0
FL	Allogeneic SCT (RIC)	3	2 (67)	67 (66 - 67)	0	0	1 (33)	2 (67)
	Autologous SCT	16	10 (63)	62 (43 - 73)	0	0	1 (6)	15 (94)
	Untreated	5	1 (20)	51 (38 - 68)	0	0	0	0
	Anti CD-20 Monotherapy	3	1 (33)	60 (60 - 71)	2 (67)	1 (33)	0	0
	Anti CD-20 Other	11	5 (45)	71 (47 - 89)	0	3 (27)	3 (27)	5 (45)
	Anti CD-20 + CHOP	6	4 (67)	60 (38 - 72)	0	0	2 (33)	4 (67)
	Anti CD-20 + Bendamustine, CdA, fludarabine	7	2 (29)	73 (67 - 88)	0	2 (29)	3 (43)	2 (29)
	CHOP	1	CONF	CONF	1 (100)	0	0	0
	Venetoclax +/- Other	1	CONF	CONF	1 (100)	0	0	0
DLBCL	Anti CD-20 + CHOP	22	11 (50)	58 (30 - 86)	0	3 (14)	4 (18)	15 (68)
	Autologous SCT	31	16 (52)	61 (37 - 74)	0	1 (3)	2 (6)	28 (90)
	Untreated	4	2 (50)	62 (48 - 73)	0	0	0	0
	Anti CD-20 Monotherapy	4	2 (50)	58 (42 - 65)	0	0	0	4 (100)
	Anti CD-20 Other	2	1 (50)	59 (47 - 72)	0	0	0	2 (100)
	Allogeneic SCT (RIC)	2	1 (50)	61 (61 - 62)	0	0	2 (100)	0
	6-mercaptopurine, methotrexate	1	CONF	CONF	0	0	0	1 (100)
	HDMtx	1	CONF	CONF	0	0	0	1 (100)
	CHOP	1	CONF	CONF	1 (100)	0	0	0
	Immunosuppressants#	1	CONF	CONF	1 (100)	0	0	0
	Allogeneic SCT (MAC)	1	CONF	CONF	0	0	0	1 (100)
CLL	Allogeneic SCT (MAC)	2	0 (0)	58 (56 - 60)	0	0	0	2 (100)
	Allogeneic SCT (RIC)	4	1 (25)	59 (57 - 71)	0	0	0	4 (100)
	Untreated	3	1 (33)	70 (54 - 73)	0	0	0	0
	Anti CD-20 + Bendamustine, CdA, fludarabine	19	7 (37)	66 (52 - 79)	0	4 (21)	5 (26)	10 (53)
	BTK Inhibitors	41	19 (46)	76 (56 - 90)	39 (95)	2 (5)	0	0
	Venetoclax +/- Other	3	0 (0)	61 (60 - 74)	3 (100)	0	0	0
	Anti CD-20 Other	5	2 (40)	75 (71 - 86)	0	1 (20)	1 (20)	3 (60)
	Hydroxycarbamide	1	CONF	CONF	1 (100)	0	0	0

	Anti CD-20 + CHOP	1	CONF	CONF	0	0	0	1 (100)
MCL	Anti CD-20 Monotherapy	4	1 (25)	70 (66 - 75)	1 (25)	2 (50)	1 (25)	0
	Autologous SCT	6	3 (50)	66 (62 - 71)	0	0	0	6 (100)
	Venetoclax +/- Other	1	CONF	CONF	1 (100)	0	0	0
	BTK Inhibitors	3	0 (0)	76 (59 - 79)	3 (100)	0	0	0
	Untreated	1	CONF	CONF	0	0	0	0
T-NHL	Autologous SCT	17	10 (59)	51 (36 - 69)	0	0	1 (6)	16 (94)
	Allogeneic SCT (MAC)	1	CONF	CONF	0	0	0	1 (100)
	Ruxolitinib****	1	CONF	CONF	1 (100)	0	0	0
	Cyclophosphamide	1	CONF	CONF	1 (100)	0	0	0
HL	Autologous SCT	19	12 (63)	40 (26 - 64)	0	0	3 (16)	16 (84)
	Anti CD-20 + Bendamustine, CdA, fludarabine	1	CONF	CONF	1 (100)	0	0	0
	Untreated	3	1 (33)	62 (19 - 66)	0	0	0	0
	Vinblastine	1	CONF	CONF	1 (100)	0	0	0
	BEAM	1	CONF	CONF	1 (100)	0	0	0
	ABVD	8	7 (88)	28 (19 - 46)	0	3 (38)	1 (13)	4 (50)
	BEACOPP	3	2 (67)	34 (25 - 40)	0	0	0	3 (100)
	escBEACOPP	4	1 (25)	51 (41 - 60)	0	0	2 (50)	2 (50)
	AVD	1	CONF	CONF	0	0	0	1 (100)
	Nivolumab	3	2 (67)	35 (33 - 43)	2 (67)	0	0	1 (33)
	Anti CD-20 + CHOP	1	CONF	CONF	0	0	0	1 (100)
B-NHL Other	Autologous SCT	2	1 (50)	50 (41 - 60)	0	0	0	2 (100)
	Cladribine	1	CONF	CONF	0	0	1 (100)	0
	Anti CD-20 Monotherapy	1	CONF	CONF	0	1 (100)	0	0
PMF	Anagrelide/Interferon	1	CONF	CONF	1 (100)	0	0	0
	Hydroxycarbamide	31	23 (74)	72 (62 - 87)	30 (97)	0	1 (3)	0
	Ruxolitinib	9	5 (56)	65 (51 - 79)	9 (100)	0	0	0
	IMiDs no Proteasome Inhibitors	1	CONF	CONF	1 (100)	0	0	0
	Untreated	1	CONF	CONF	0	0	0	0
PV	Ruxolitinib	4	2 (50)	69 (62 - 71)	4 (100)	0	0	0
	Hydroxycarbamide	84	50 (60)	69 (36 - 82)	83 (99)	0	0	1 (1)
	Anagrelide/Interferon	3	2 (67)	70 (43 - 88)	3 (100)	0	0	0
	Untreated	19	7 (37)	52 (27 - 80)	0	0	0	0

B-NHL Other - Burkitt lymphoma and Hairy cell leukemia

T-NHL - Peripheral T-cell lymphoma, Anaplastic large cell lymphoma, Angioimmunoblastic T-cell lymphoma

* - Imatinib; Dasatinib; Nilotinib

** - Gilteritinib

*** - the patient received autologous SCT for MM and R-CHOP for post-transplant lymphoproliferative disorder

**** - ruxolitinib for GvHD treatment

- Patients receiving standard immunosupression after allogeneic stem cell transplantation were included in the “Allogeneic SCT“ group. Patients receiving immunosuppresive therapy for chronic graft versus host disease or other diseases were included in the “Immunosuppressants“ group.

Treatment regimens:	
IMiD with Proteasome Inhibitor	VTd; KRd; IRd
IMiD without Proteasome Inhibitor	CTD; Lenalidomide, Dexamethasone; Pomalidomide, Dexamethasone; Thalidomide, Prednisolone; Lenalidomide
Proteasome Inhibitor without IMiD	Kd; CyBorDex
Anti CD-20 with CHOP	R-CHOP; R-miniCHOP; R-HiCHOP
Anti CD-20 Other	R-DHAP; R-TEDDI; R-MTX; R-FC; R-Cy; R-CD; R-Chl; Obi-Chl
BTKi	Ibrutinib; Acalabrutinib
Other Systemic Therapy	Cladribine; Bendamustine; Vinblastine; Cyclophosphamide, Prednisolone; Vincristine, Dexamethasone
	Bendamustine, Dexamethasone; Busulfan; 6MP-MTX; MTX; HD-MTX; CHOP; BEAM; BEACOPP; escBEACOPP
	ABVD; AVD; HDAraC; Decitabine; ATO, ATRA; Glasdegib, LDAraC; Ivosidenib or Placebo
TK Inhibitors	Imatinib; Dasatinib; Nilotinib; Gilteritinib
Immunosuppressants	Methylprednisolone; Prednisolone; Dexamethasone; Budesonide; MMF; MMF, Methylprednisolone
Venetoclax with or without other drugs	Venetoclax; Venetoclax, Decitabine; Venetoclax, Azacitidine
	Venetoclax, LDAraC; Venetoclax, LDAraC, Gilteritinib; Venetoclax, Ibrutinib

Supplementary Table 3. Baseline characteristics of untreated patients with HMs.

Disease	N	Female (%)	Median age, years (range)
CLL	3	1 (33)	70 (54 - 73)
CMML	1	CONF	CONF
DLBCL	4	2 (50)	62 (48 - 73)
FL	6	1 (17)	55 (38 - 68)
HL	3	1 (33)	63 (19 - 66)
MCL	1	CONF	CONF
MDS	12	6 (50)	77 (72 - 85)
MM	3	1 (33)	61 (44 - 70)
PV	19	7 (37)	66 (27 - 80)
ET	1	CONF	CONF

Supplementary Table 4. Baseline characteristics of post-splenectomy patients with HMs.

Patient	Last treatment	Time from last treatment (mos.)	Time from splenectomy (yrs.)	Median anti-S1 IgG at TP0 (range) (AU/mL)	Median anti-S1 IgG at TP1 (range) (AU/mL)	Median anti-S1 IgG at TP2 (range) (AU/mL)
1	AlloSCT	>24	36	0.7	201.6	8021.4
2	AlloSCT	>24	15	0	1173.9	4955.1
3	BTKi	-	6	4.4	0.1	0
4	Anti-CD20 + Chemo	>12	1	1.6	21.3	4283.6
5	ABVD	>12	3	9.6	n/a	273.3

Supplementary Table 5. Baseline characteristics of patients with HMs positive for anti-S1 IgG at TP0.

Treatment	N	Female N (%)	Median age, years (range)	Undergoing treatment at the time of vaccination, N (%)	Last treatment <6 months, N (%)	Last treatment 6-12 months, N (%)	Last treatment >12 months, N (%)
HM anti-S1 IgG seropositive at TP0	28	15 (54)	60 (22 - 85)	9 (32)	1 (4)	2 (7)	16 (57)
Autologous SCT	10	7 (70)	63 (33 - 69)	0	0	1 (9)	9 (90)
Allogeneic SCT	6	3 (50)	48 (35 - 63)	0	0	1 (17)	5 (83)
MAC	5	3 (60)	44 (35 - 63)	0	0	1 (20)	4 (80)
RIC	1	CONF	CONF	0	0	0	1 (100)
TK Inhibitors	2	0 (0)	40 (22 - 59)	2 (100)	0	0	0
IMiDs AND/OR Proteasome Inhibitor	4	2 (50)	61 (57 - 85)	3 (75)	0	0	1 (25)
Hydroxycarbamide	2	2 (100)	65 (60 - 69)	1 (100)	0	0	0
Anti-CD20 Monotherapy	2	0 (0)	68 (65 - 71)	1 (50)	1 (50)	0	0
Nivolumab	1	CONF	CONF	1 (100)	0	0	0
Other Systemic Therapy	1	CONF	CONF	0	0	0	1 (100)

Supplementary Table 6. Systemic event grading scale.

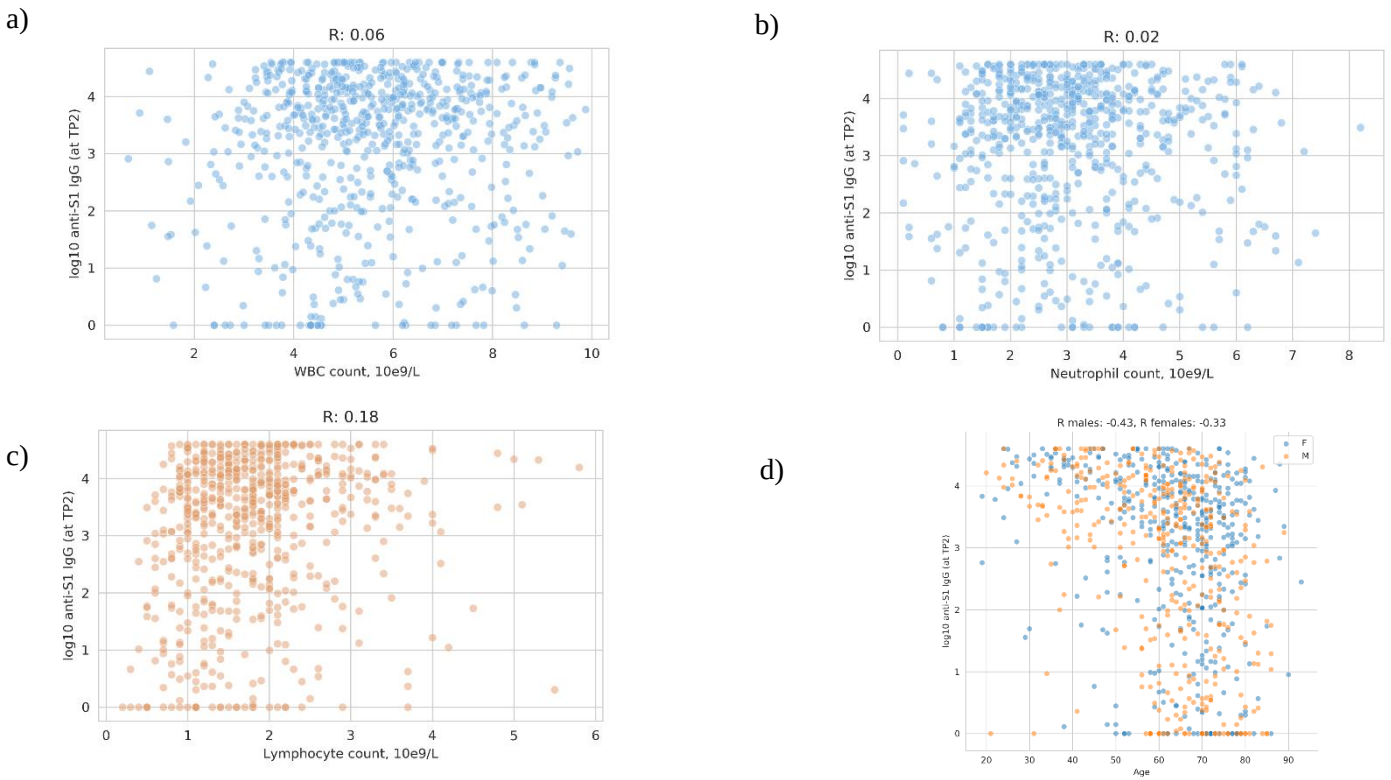
Systemic reaction	Mild (Grade 1)	Moderate (Grade 2)	Severe (Grade 3)	Potentially Life-Threatening (Grade 4)
Vomiting	1-2 times in 24 hours	>2 times in 24 hours	Requires IV hydration	Emergency room visit or hospitalization for hypotensive shock
Diarrhea	2 to 3 loose stools in 24 hours	4 to 5 loose stools in 24 hours	6 or more loose stools in 24 hours	Emergency room visit or hospitalization for severe diarrhea
Fever	38.0ºC – 39.0ºC	39.1ºC – 40.0ºC	>40.0ºC	Emergency room visit or hospitalization for severe fever
Chills	Does not interfere with activity	Some interference with activity	Prevents daily routine activity	Emergency room visit or hospitalization for severe chills
Fatigue	Does not interfere with activity	Some interference with activity	Prevents daily routine activity	Emergency room visit or hospitalization for severe fatigue
Headache	Does not interfere with activity	Some interference with activity	Prevents daily routine activity	Emergency room visit or hospitalization for severe headache
Muscle pain	Does not interfere with activity	Some interference with activity	Prevents daily routine activity	Emergency room visit or hospitalization for severe muscle pain
Joint pain	Does not interfere with activity	Some interference with activity	Prevents daily routine activity	Emergency room visit or hospitalization for severe joint pain

Supplementary Table 7. Clinical characteristics of fully vaccinated patients with haematological malignancies who contracted COVID-19

Haematological malignancy (Time since diagnosis)	Disease status at first immunisation	Last HM treatment (months)	Current or last treatment administered	No of treatment lines at the time of first immunisation	TP2 anti-S1 IgG (AU/mL)	Days from second immunisation to SARS-CoV-2 positive PCR	SARS-CoV-2 PCR nadir CT values	SARS-CoV-2 genotype	COVID-19 symptoms	anti-S1 IgG (AU/mL) on hospitalisation day	COVID-19 treatment	COVID severity
AML (2.0 years)	CR	>12	alloSCT	2 [1. FLAG-IdA 2. alloSCT with DLI]	6212.8	49	22	N501Y + Del69-70 + E484K -	Fever, dyspnea	5071.1	Dexamethasone, Remdesivir, Low-flow oxygen therapy	Hospitalized, requiring supplemental oxygen
CLL (2.6 years)	Active disease	<3	Ibrutinib	1	2.7	72	16	N501Y + Del69-70 + E484K -	Fever, dyspnea, pneumonitis, respiratory failure	N/A	Dexamethasone, High-flow oxygen therapy	Death from COVID-19 (4 days from diagnosis)
CLL (17.0 years)	CR	<3	Ibrutinib	2 [1. chlorambucil 2. ibrutinib]	1635.3	40	19	N501Y + Del69-70 + E484K -	None	813.9	None	Not hospitalized, no limitations on activities
CLL (13.5 years)	PR	Active	Venetoclax	4 [1. FluCy 2. Obinutuzumab-FC 3. Ibrutinib 4. Venetoclax]	0	33	15	N501Y + Del69-70 + E484K -	Fatigue, fever, dyspnea, pneumonitis	0	Dexamethasone, Remdesivir, Convalescent plasma therapy, Low-flow oxygen therapy	Hospitalized, requiring supplemental oxygen
MCL (1.7 years)	CR	Active	Rituximab	3 [1. R-CHOP 2. autoSCT 3. Rituximab]	0	59	N/A	N/A	Fatigue, fever, cough, nausea, pneumonitis	0	Dexamethasone, Remdesivir, Convalescent plasma therapy, Low-flow oxygen therapy	Hospitalized, requiring supplemental oxygen
MCL (1.3 years)	CR	Active	Ibrutinib	2 [1. R-mini-CHOP/R-Arac-C 2. Ibrutinib]	3.2	36	N/A	N/A	Fatigue, dyspnea, pneumonitis, respiratory failure	N/A	Dexamethasone, mechanical ventilation	Death from COVID-19 (6 days from diagnosis)
AL amyloidosis (11 months)	Active disease	Active	No specific treatment	0 [VTD started 2 weeks after vaccination]	1138.2	32	8	N501Y + Del69-70 +	Fatigue, dyspnea, pneumonia, respiratory failure	N/A	Dexamethasone, Remdesivir, Low-flow oxygen therapy	Death from COVID-19 (26 days from diagnosis)
MM (8 months)	VGPR	Active	CyBorDex	1	0	30	13	N501Y + Del69-70 + E484K -	Fatigue, dyspnea	N/A	None	Not hospitalized, no limitations on activities
HCL (16.3 years)	Relapsed disease	>6	Cladribine	2 [1. Inteferon-alpha 2. Cladribine]	5.5	86	15	N501Y + Del69-70 + E484K -	Fatigue, fever, dyspnea	257.4	None	Hospitalized, not requiring supplemental oxygen

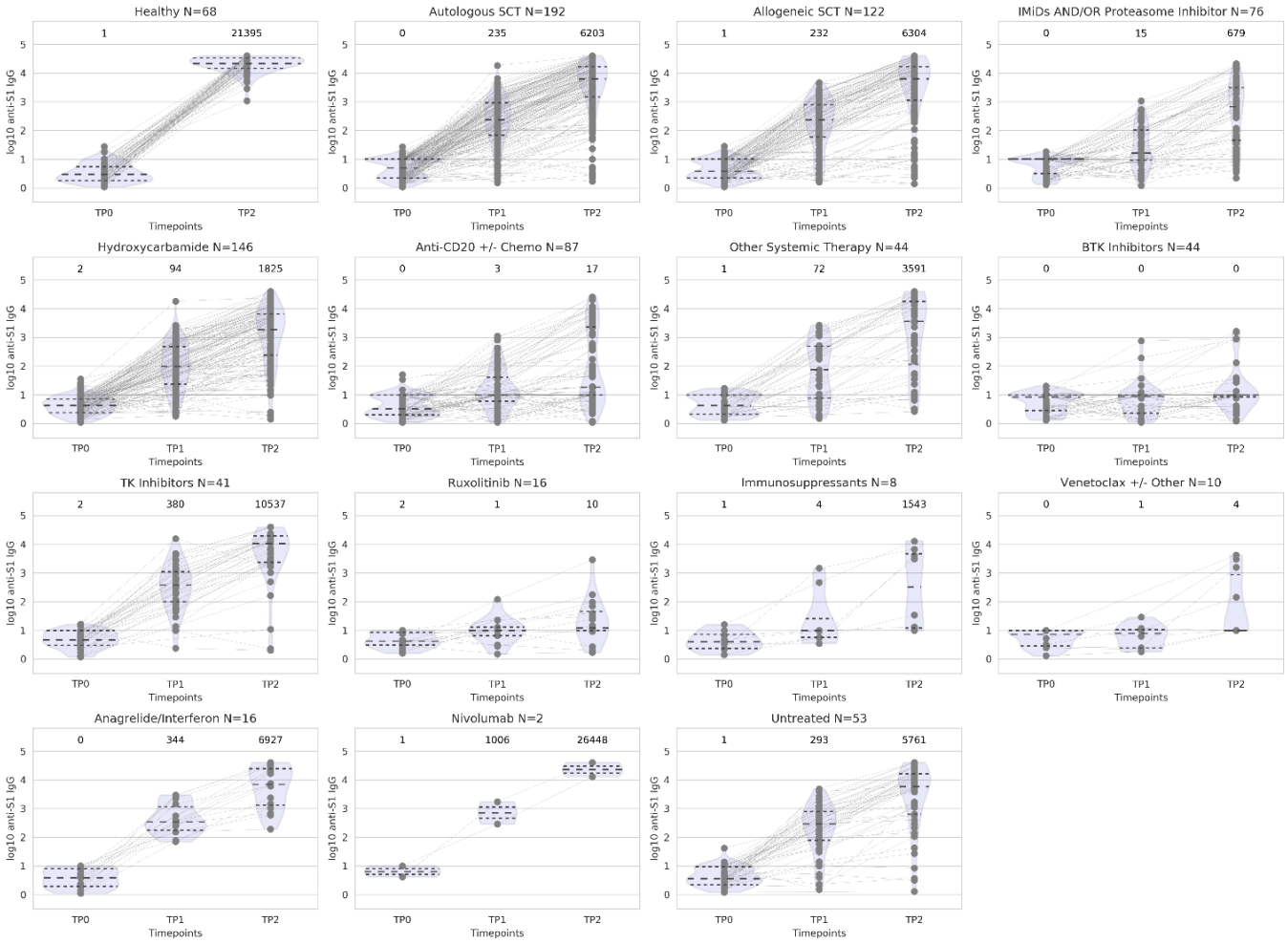
Abbreviations can be found in Supplementary Table 1. N501Y, del 69-70 and E484K correspond to specific mutations in SARS-CoV-2 spike protein sequence. N501Y positive del 69-70 positive and E484K negative SARS-CoV-2 cases correspond to B.1.1.7 lineage, which was dominant in Lithuania between February and May, 2021.

FIGURES



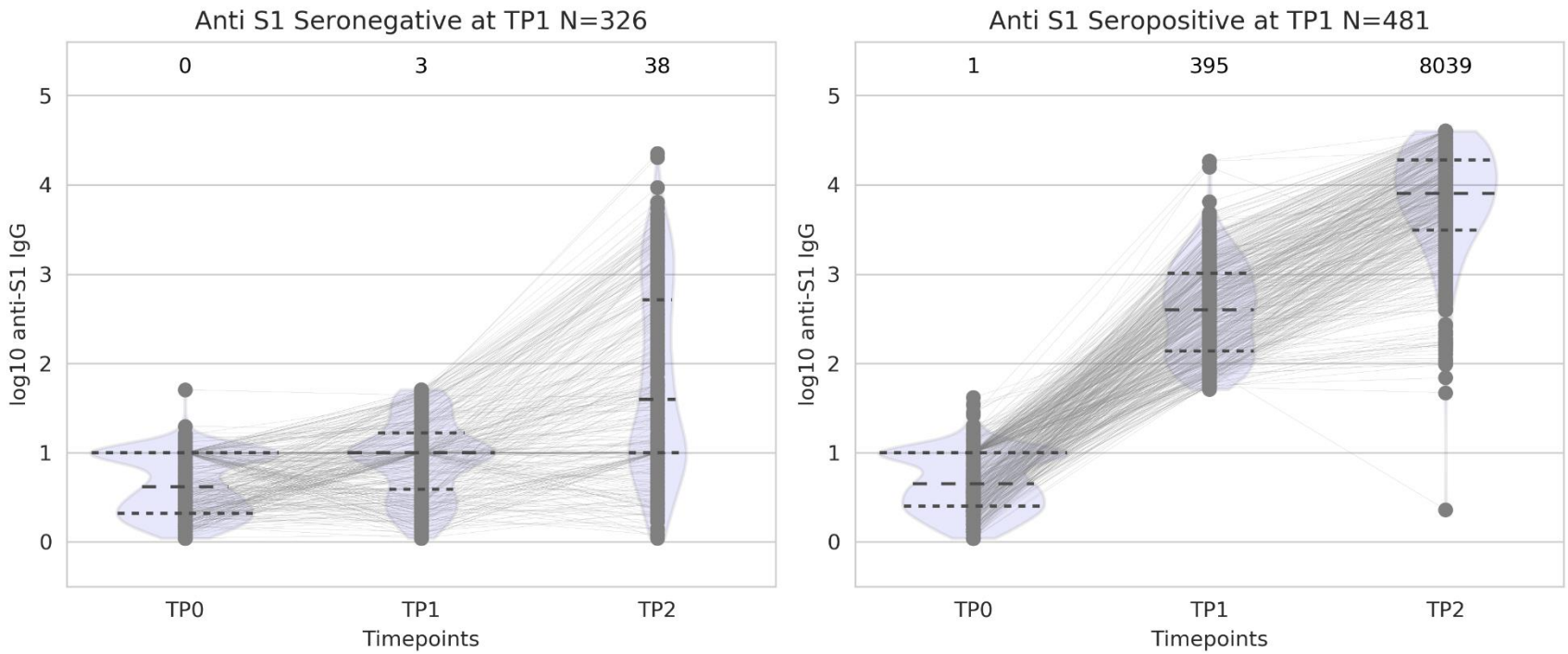
Supplementary Figure 1. Correlation between the anti-S1 IgG level at TP2 and HM patient blood counts, age and sex

a) prevaccination WBC b) prevaccination neutrophil count c) prevaccination lymphocyte count d) age and sex
R above the subfigures is Spearman's correlation coefficient.



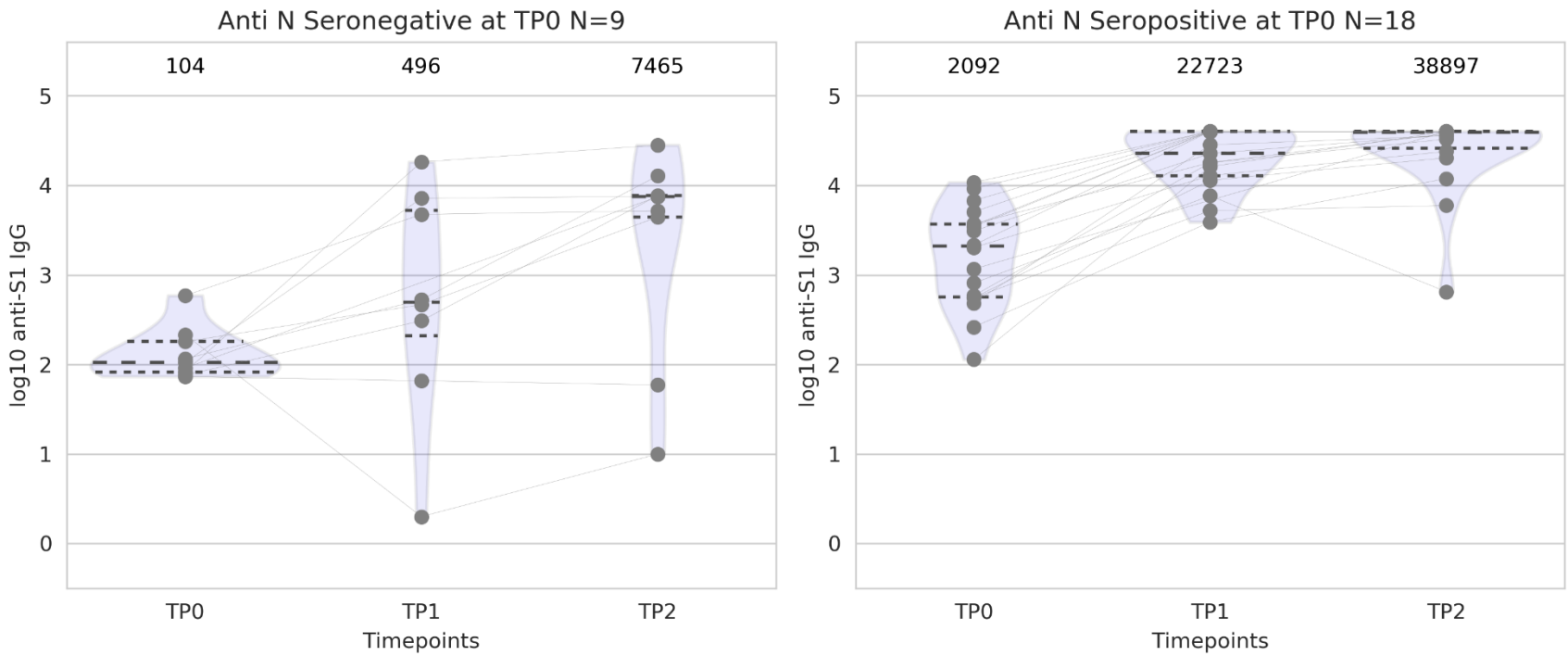
Supplementary Figure 2. Serological response to 1 and 2 doses of BNT162b2 mRNA vaccine across different treatment groups and in healthy individuals.

The bottom and top lines in each violin plot represent interquartile range Q1-Q3, the line in the centre of the violin plot represents the median value. The dots represent individual participants. The violin plot shows the distribution density of the data at different logarithmic anti-S1 IgG values. The median value in AU/mL is shown above each violin plot. “N” shows the number of individuals in the group. The treatment regimens of each group are listed below Table 1.



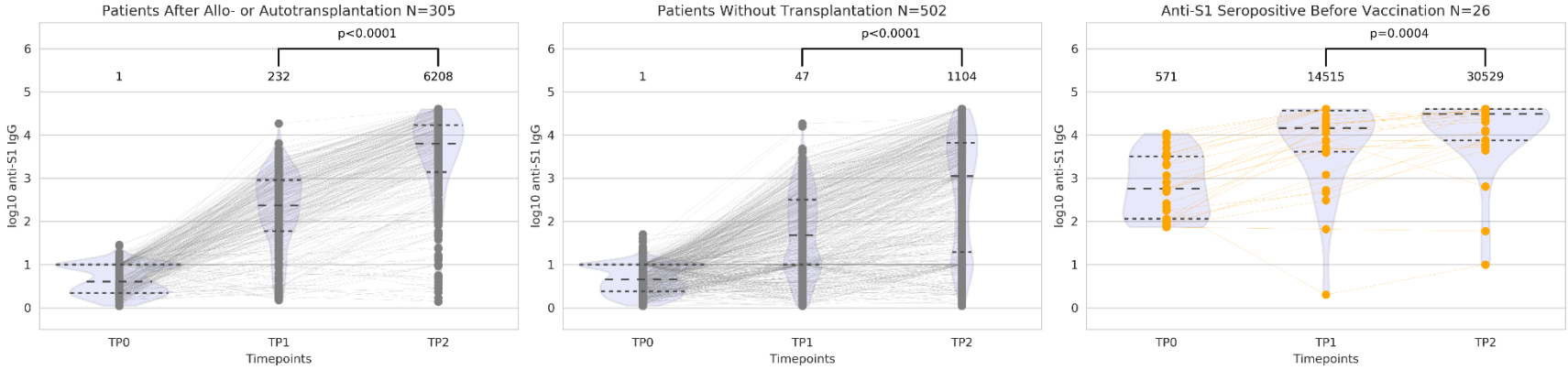
Supplementary Figure 3. Serological response stratified by seroconversion status at TP1.

The bottom and top lines in each violin plot represent interquartile range Q1-Q3, the line in the centre of the violin plot represents the median value. The dots represent individual participants. The violin plot shows the distribution density of the data at different logarithmic anti-S1 IgG values. The median value in AU/mL is shown above each violin plot. “N” shows the number of individuals in the group.



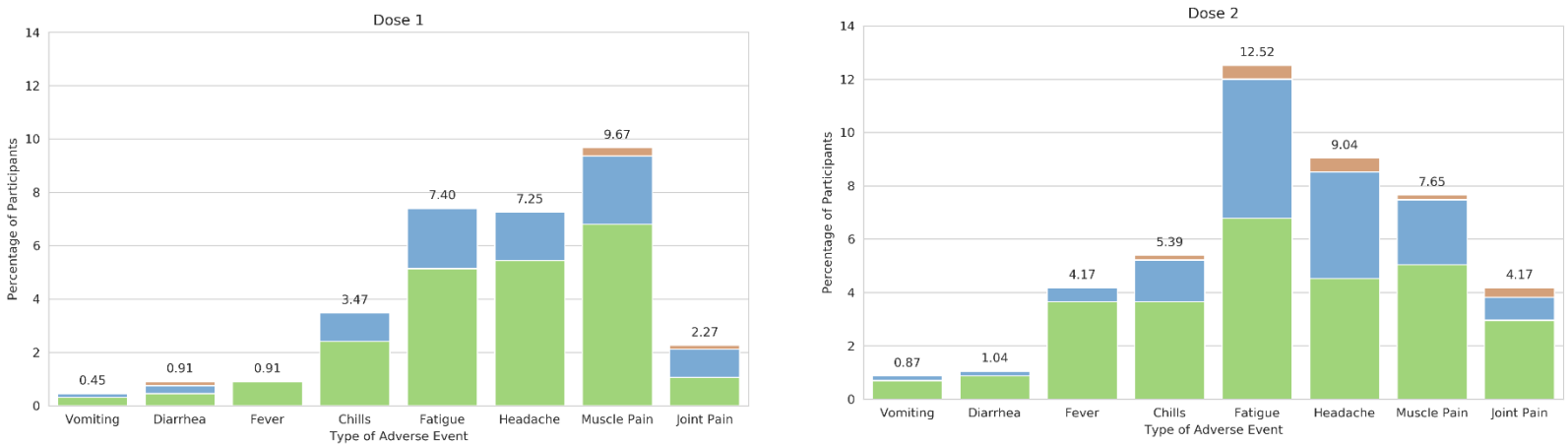
Supplementary Figure 4. Serological response of anti-S1 IgG seropositive HMs at TP0 stratified by anti-N seropositivity at TP0.

The bottom and top lines in each violin plot represent interquartile range Q1-Q3, the line in the centre of the violin plot represents the median value. The dots represent individual participants. The violin plot shows the distribution density of the data at different logarithmic anti-S1 IgG values. The median value in AU/mL is shown above each violin plot. "N" shows the number of individuals in the group. The anti-N seroconversion status could not be determined in one anti-S1 IgG seropositive patient at TP0.



Supplementary Figure 5. Serological response of HMs with and without SCT and anti-S1 IgG seropositive HMs at TP0.

The bottom and top lines in each violin plot represent interquartile range Q1-Q3, the line in the centre of the violin plot represents the median value. The dots represent individual participants. The violin plot shows the distribution density of the data at different logarithmic anti-S1 IgG values. The median value in AU/mL is shown above each violin plot. “N” shows the number of individuals in the group. Twenty-six of 28 anti-S1 seropositive before vaccination subjects are presented in the violin plot, because TP1 data was not available for two individuals.



Supplementary Figure 6. Systemic events reported within 7 days after vaccination with the first and the second dose of BNT162b2 in patients with haematological malignancies.

The columns represent the percentage of study participants reporting systemic (green – mild/grade I, blue – moderate/grade II, orange – severe/grade III, red - potentially life-threatening/grade IV) events within 7 days after the first and the second dose of BNT162b2.