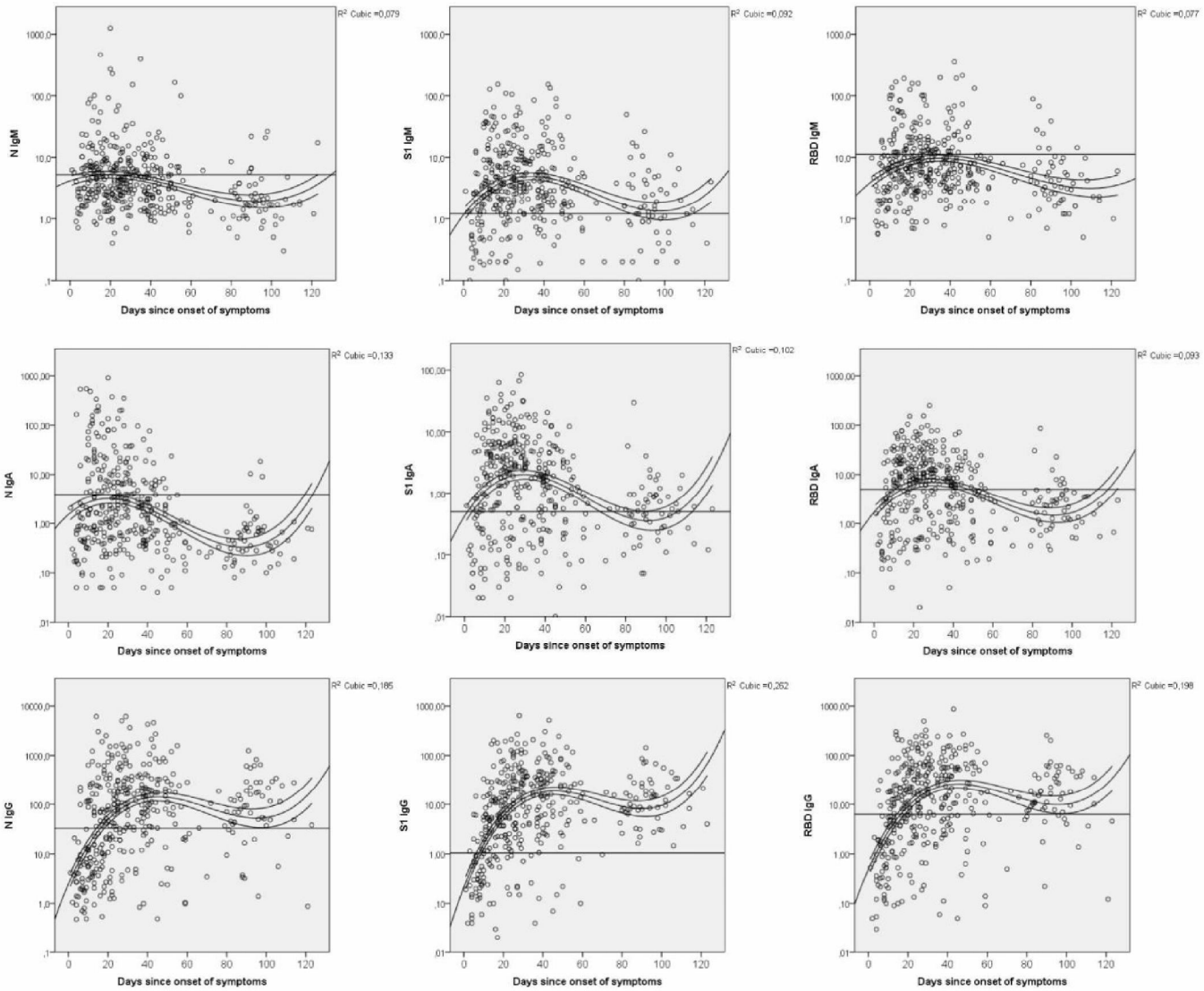
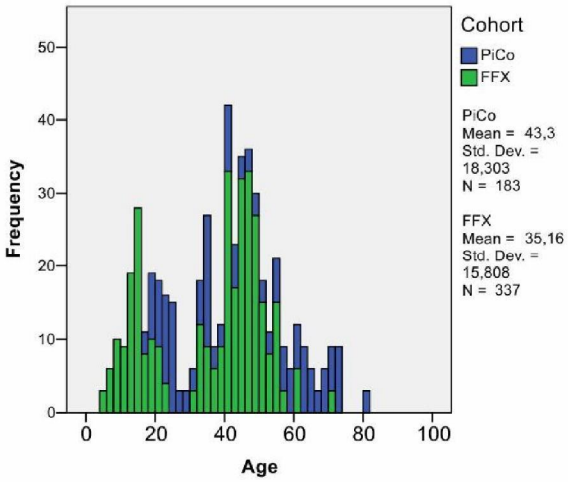
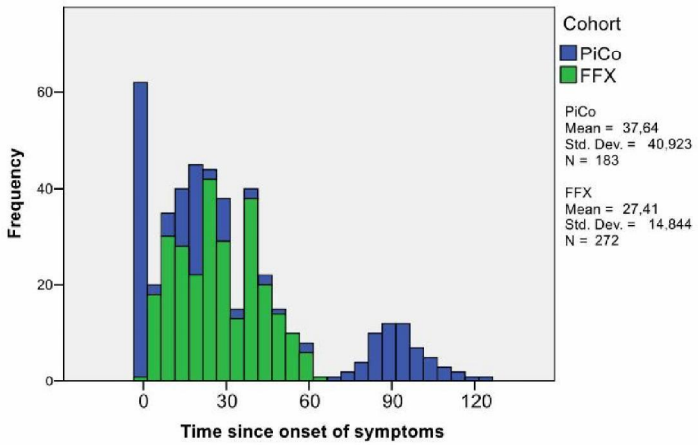
Merged FFX and PiCo data

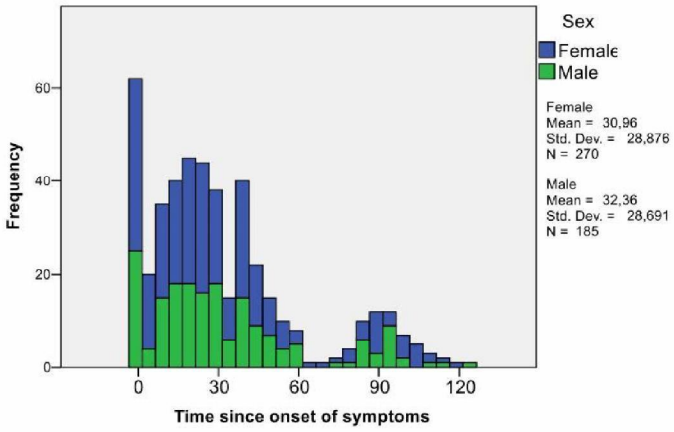
		Age group 1-16		17 >		
		Mean	Count	Mean	Count	Significance
N			30		89	
Age		12		42		
Sex	male		14 (47%)		33 (37%)	
Days post symptoms		10		12		0.210
Index case			0		55	
Symtoms						<0.001
	Asymptomatic		9 (30%)		2 (2.5%)	
	Non-hospitalized		21 (70%)		71 (88.8%)	
	Hospitalized		0 (0%)		7 (8.8%)	

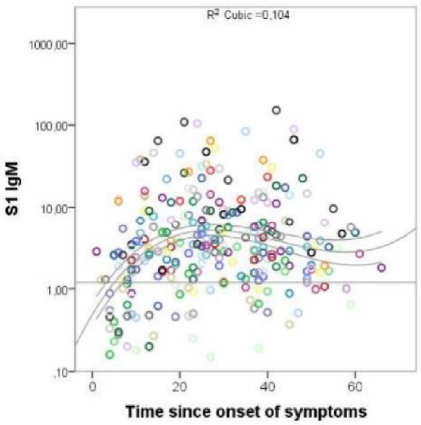
		Age group 16-50		51 - 81		
		Mean	Count	Mean	Count	Significance
N			38		23	
Age		12		42		
Sex	male		18 (47%)		7 (30%)	
Days post symptoms		18.3		26.9		0.0012
Symtoms						<0.001
	Asymptomatic		0 (0%)		4 (2.5%)	
	Non-hospitalized		21 (70%)		71 (88.8%)	
	Hospitalized		0 (0%)		7 (8.8%)	

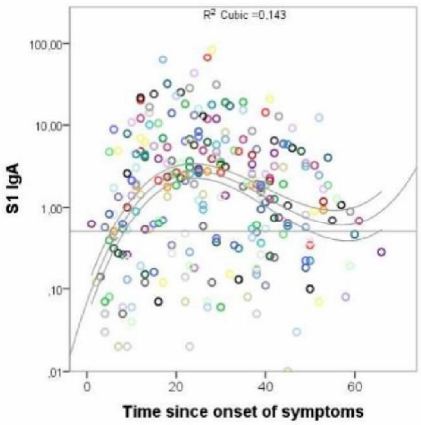

N IgM
S1 IgM
RBD IgM
N IgA
S1 IgA
RBD IgA
N IgG
S1 IgG
RBD IgG
Days since onset of symptoms

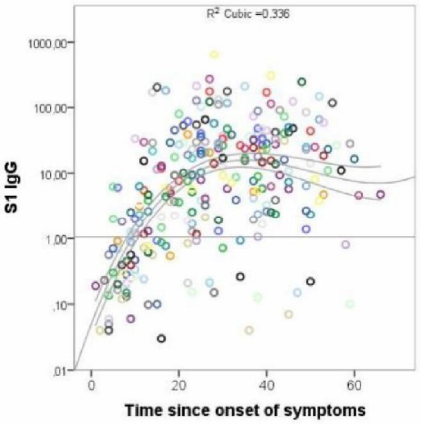

Cohort
PiCo
FFX
PiCo
Mean = 43,3
Std. Dev. = 18,303
N = 183
FFX
Mean = 35,16
Std. Dev. = 15,808
N = 337
Frequency
Age
0
10
20
30
40
50
0
20
40
60
80
100

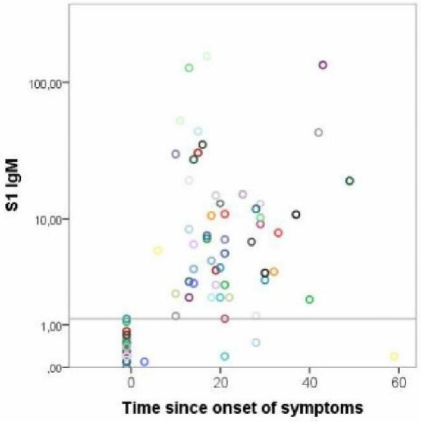

Cohort
PiCo
FFX
PiCo
Mean = 37,64
Std. Dev. = 40,923
N = 183
FFX
Mean = 27,41
Std. Dev. = 14,844
N = 272
Frequency
Time since onset of symptoms
0
20
40
60
0
30
60
90
120

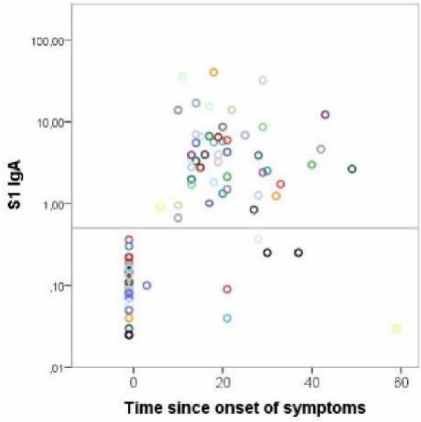

Sex
Female
Male
Female
Mean = 30,96
Std. Dev. = 28,876
N = 270
Male
Mean = 32,36
Std. Dev. = 28,691
N = 185
Frequency
Time since onset of symptoms
0
20
40
60
0
30
60
90
120

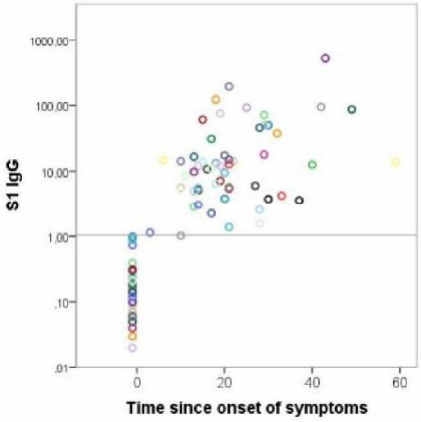

R² Cubic =0,104
S1 IgM
Time since onset of symptoms

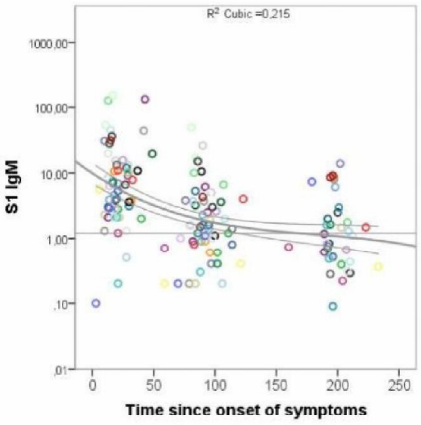

R² Cubic =0,143
S1 IgA
Time since onset of symptoms

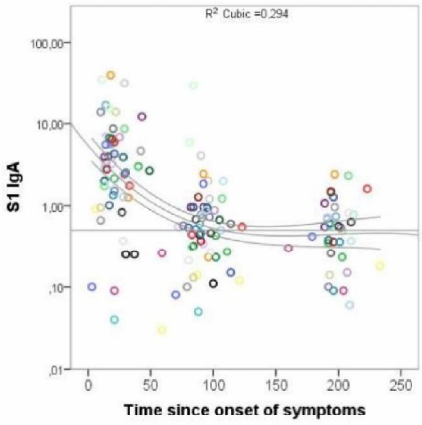

R² Cubic =0,336
S1 IgG
Time since onset of symptoms

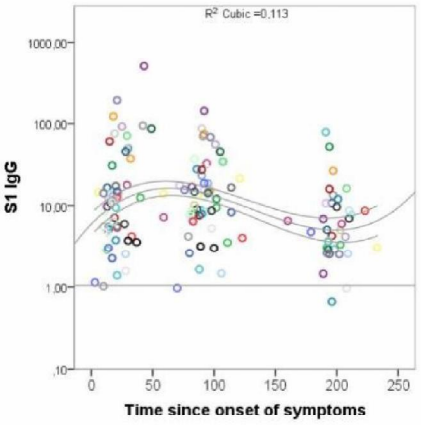

S1 IgM
Time since onset of symptoms

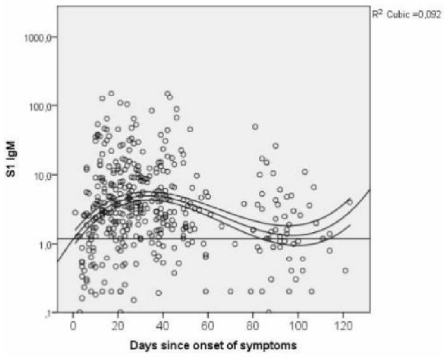

S1 IgA
Time since onset of symptoms

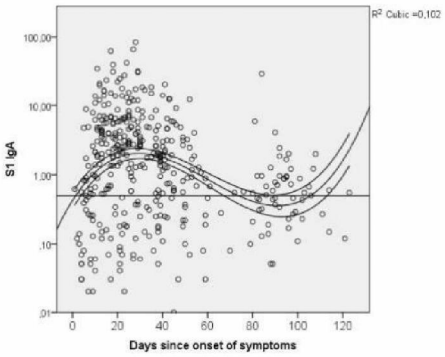

S1 IgG
Time since onset of symptoms

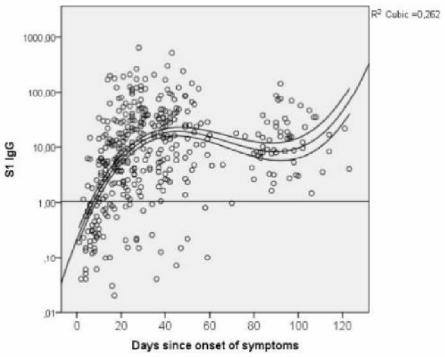

R² Cubic =0,215
S1 IgM
Time since onset of symptoms

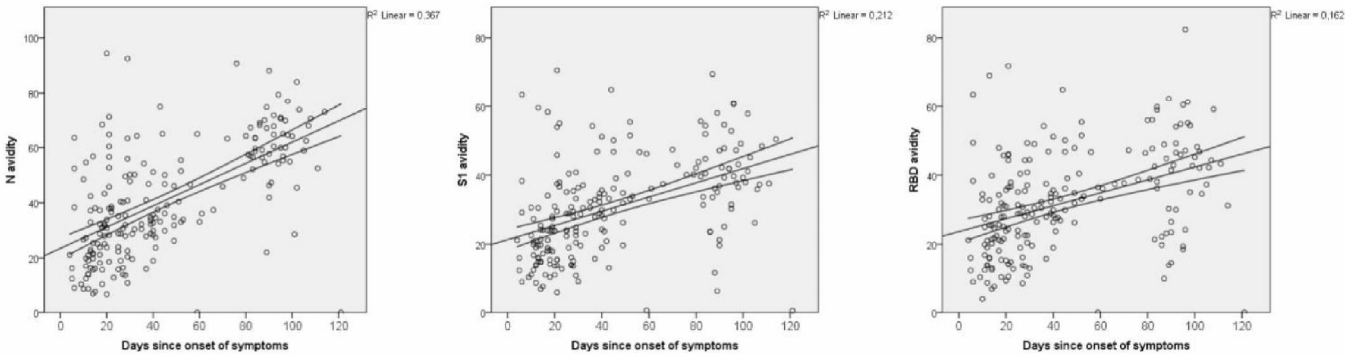

R² Cubic =0,294
S1 IgA
Time since onset of symptoms

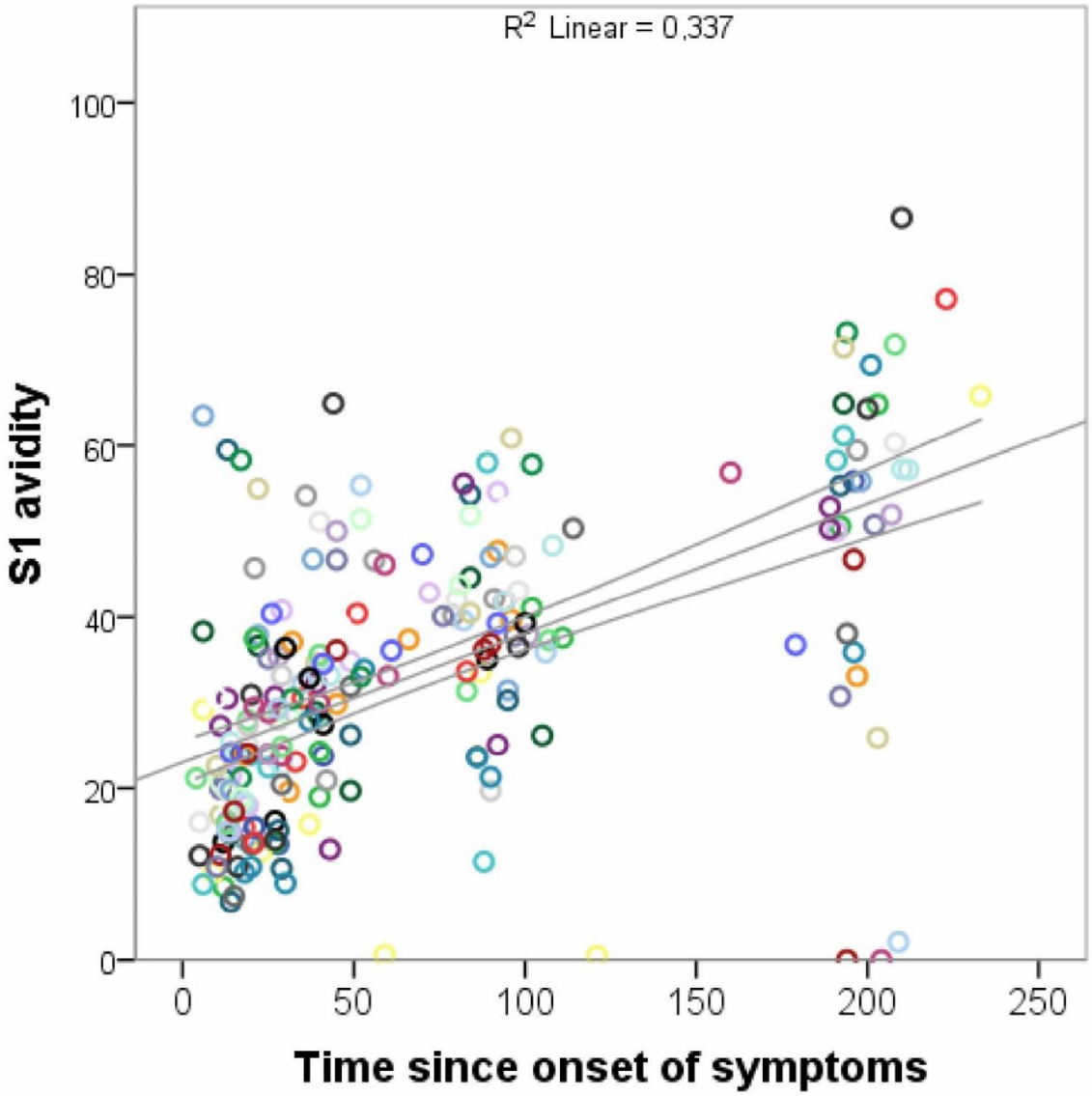

R² Cubic =0,113
S1 IgG
Time since onset of symptoms


R² Cubic =0,092
S1 IgM
Days since onset of symptoms


R² Cubic =0,102
S1 IgA
Days since onset of symptoms


R² Cubic =0,262
S1 IgG
Days since onset of symptoms


R² Linear = 0,367
N avidity
Days since onset of symptoms
R² Linear = 0,212
S1 avidity
Days since onset of symptoms
R² Linear = 0,162
RBD avidity
Days since onset of symptoms


R² Linear = 0,337
S1 avidity
Time since onset of symptoms

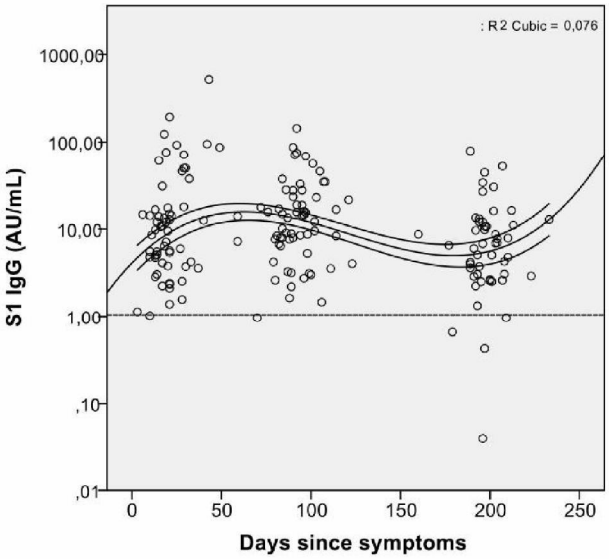


Table: number and % of articipants with antibodies to SARS-CoV-2 antigens in the PiCo study rounds 1-3

		S1_IgG	N_IgG	RBD_IgG	S1_IgA	N_IgA	RBD_IgA	S1_IgM	N_IgM	RBD_IgM
PiCo 1	N tot	59	59	59	59	59	59	59	59	59
	N pos	59	38	44	49	26	44	51	21	30
	%	100,0	64,4	74,6	83,1	44,1	74,6	86,4	35,6	50,8
PiCo 2	N tot	59	59	59	59	59	59	59	59	59
	N pos	58	46	47	31	3	8	33	8	7
	%	98,3	78,0	79,7	52,5	5,1	13,6	55,9	13,6	11,9
PiCo 3	N tot	50	50	50						
	N pos	47	23	24						
	%	94,0	46,0	48,0						

Table: number and % of articipants with antibodies to SARS-CoV-2 antigens in the PiCo study rounds 1-3

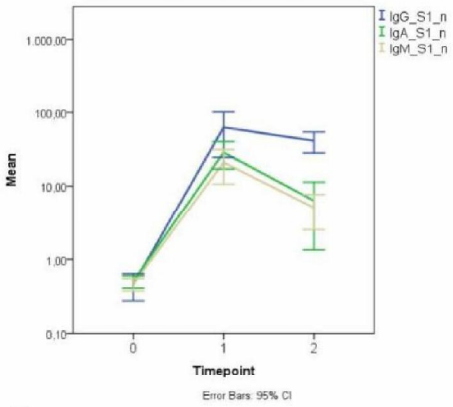
		S1_IgG	N_IgG	RBD_IgG	S1_IgA	N_IgA	RBD_IgA	S1_IgM	N_IgM	RBD_IgM
PiCo 1	N tot	59	59	59	59	59	59	59	59	59
	N pos	59	38	44	49	26	44	51	21	30
	%	100,0	64,4	74,6	83,1	44,1	74,6	86,4	35,6	50,8
PiCo 2	N tot	59	59	59	59	59	59	59	59	59
	N pos	58	46	47	31	3	8	33	8	7
	%	98,3	78,0	79,7	52,5	5,1	13,6	55,9	13,6	11,9
PiCo 3	N tot	50	50	50						
	N pos	47	23	24						
	%	94,0	46,0	48,0						

Ffx or pico data (split)

Spike S1 Ig isotypes (PiCo)

rapid decay of IgA and IgM

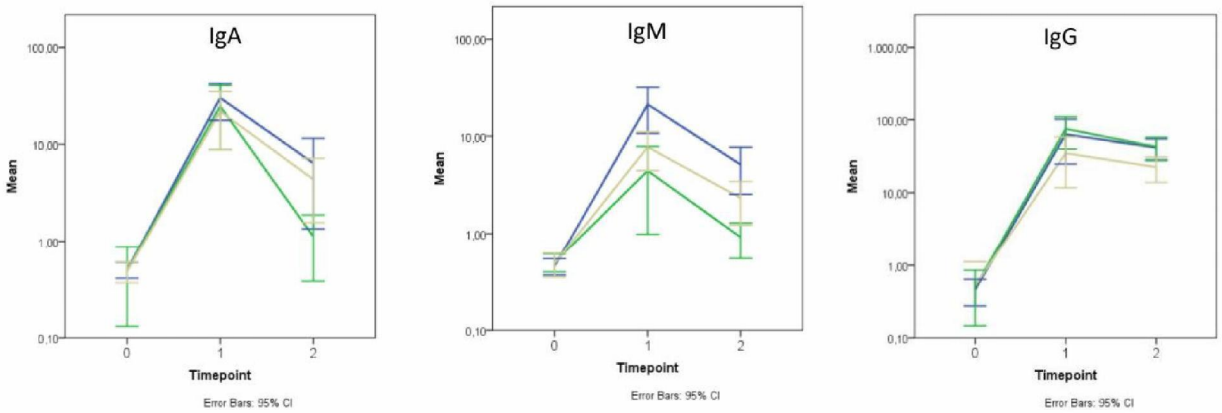
A



C

		PiCo1 V PiCo2	P3 V PiCo2
		Sig. (2-tailed)	Sig. (2-tailed)
IgG	S1	0,288	0
	N	***0,094***	0
	RBD	0,318	0
IgA	S1	0,001	0,023
	N	0,004	***0,134***
	RBD	0,01	0,008
IgM	S1	0,004	0,001
	N	0,047	**0,034**
	RBD	0,003	0,002

B

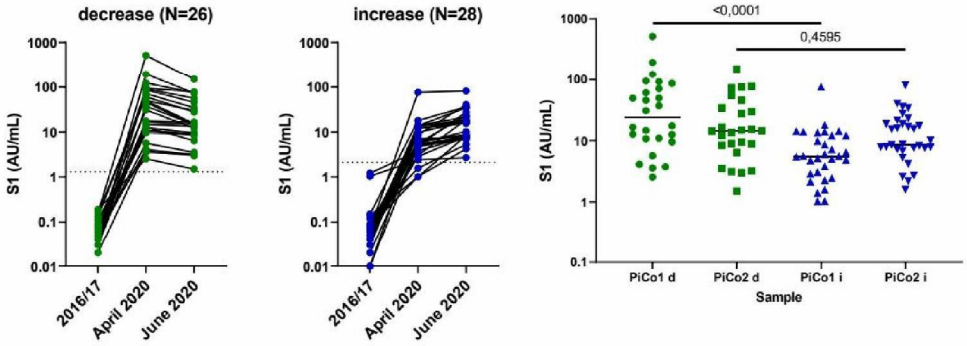


- X-axes data to be replaced with days since symptoms?

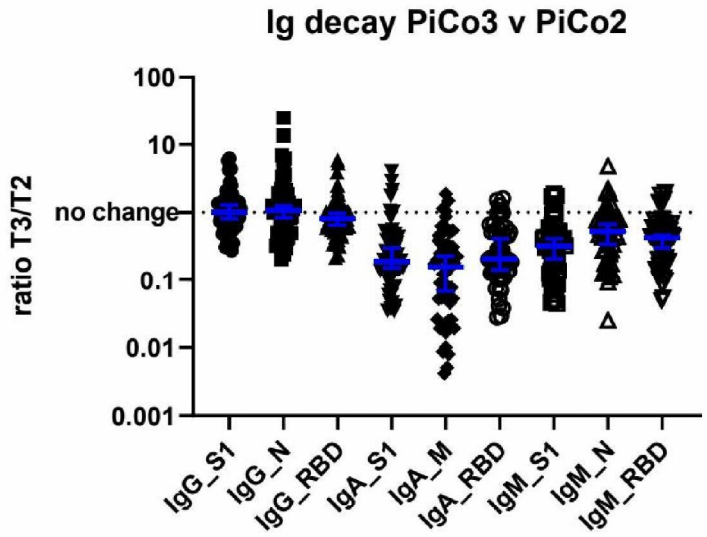
Spike S1
Nucleoprotein
RBD

Normalized concentration data for comparison

Concentrations changes (PiCo)



- X-axes data to be replaced with days since symptoms?

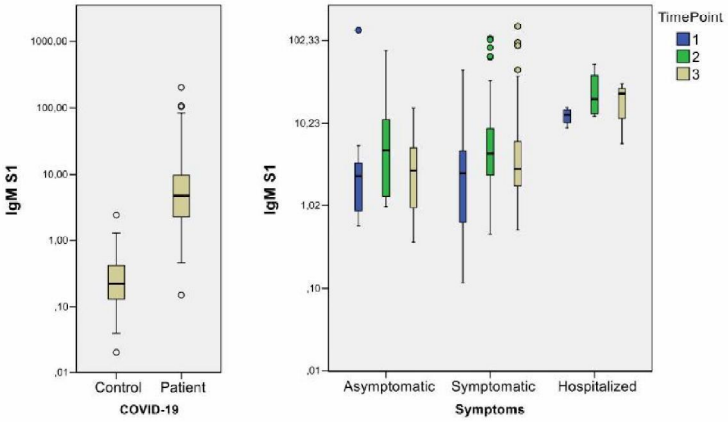


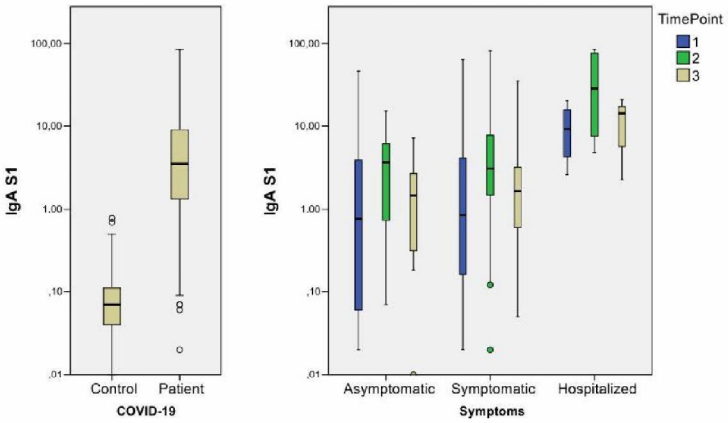
Error bars 95% CI

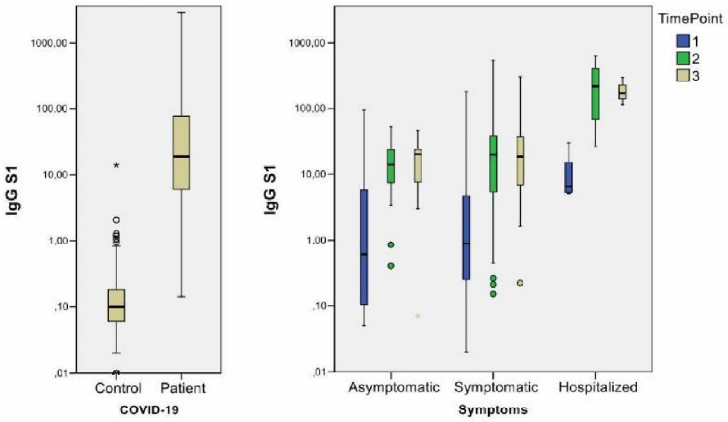
		IgG			IgA			IgM		
		S1	N	RBD	S1	N	RBD	S1	N	RBD
IgG	S1	-								
	N		-							
	RBD			-						
IgA	S1				-					
	N					-				
	RBD						-			
IgM	S1							-		
	N								-	
	RBD									-

Tukey's multiple comparisons test	Mean Diff.	95,00% CI of diff.	Significant?	Summary	Adjusted P Value
IgG_S1 vs. IgG_N	-0,04171	-0,2209 to 0,1375	No	ns	0,9977
IgG_S1 vs. IgG_RBD	0,08381	0,02176 to 0,1459	Yes	**	0,0018
IgG_S1 vs. IgA_S1	0,6593	0,4441 to 0,8744	Yes	****	<0,0001
IgG_S1 vs. IgA_N	0,9432	0,6116 to 1,275	Yes	****	<0,0001
IgG_S1 vs. IgA_RBD	0,6289	0,4174 to 0,8403	Yes	****	<0,0001
IgG_S1 vs. IgM_S1	0,5582	0,3632 to 0,7532	Yes	****	<0,0001
IgG_S1 vs. IgM_N	0,3543	0,1404 to 0,5683	Yes	****	<0,0001
IgG_S1 vs. IgM_RBD	0,4620	0,2866 to 0,6373	Yes	****	<0,0001
IgG_N vs. IgG_RBD	0,1255	-0,06448 to 0,3155	No	ns	0,4627
IgG_N vs. IgA_S1	0,7010	0,3892 to 1,013	Yes	****	<0,0001
IgG_N vs. IgA_N	0,9849	0,6522 to 1,318	Yes	****	<0,0001
IgG_N vs. IgA_RBD	0,6706	0,3742 to 0,9669	Yes	****	<0,0001
IgG_N vs. IgM_S1	0,5999	0,3449 to 0,8549	Yes	****	<0,0001
IgG_N vs. IgM_N	0,3961	0,1778 to 0,6143	Yes	****	<0,0001
IgG_N vs. IgM_RBD	0,5037	0,2718 to 0,7356	Yes	****	<0,0001
IgG_RBD vs. IgA_S1	0,5755	0,3688 to 0,7821	Yes	****	<0,0001
IgG_RBD vs. IgA_N	0,8593	0,5220 to 1,197	Yes	****	<0,0001
IgG_RBD vs. IgA_RBD	0,5451	0,3434 to 0,7467	Yes	****	<0,0001
IgG_RBD vs. IgM_S1	0,4744	0,2907 to 0,6581	Yes	****	<0,0001
IgG_RBD vs. IgM_N	0,2705	0,05032 to 0,4907	Yes	**	0,0062
IgG_RBD vs. IgM_RBD	0,3781	0,2113 to 0,5449	Yes	****	<0,0001
IgA_S1 vs. IgA_N	0,2839	0,01449 to 0,5533	Yes	*	0,0317
IgA_S1 vs. IgA_RBD	-0,03041	-0,1402 to 0,07941	No	ns	0,9924
IgA_S1 vs. IgM_S1	-0,1011	-0,2757 to 0,07358	No	ns	0,6376
IgA_S1 vs. IgM_N	-0,3049	-0,5340 to -0,07582	Yes	**	0,0022
IgA_S1 vs. IgM_RBD	-0,1973	-0,3651 to -0,02950	Yes	*	0,0103
IgA_N vs. IgA_RBD	-0,3143	-0,5932 to -0,03534	Yes	*	0,0165
IgA_N vs. IgM_S1	-0,3849	-0,6436 to -0,1263	Yes	***	0,0004
IgA_N vs. IgM_N	-0,5888	-0,8161 to -0,3615	Yes	****	<0,0001
IgA_N vs. IgM_RBD	-0,4812	-0,7277 to -0,2347	Yes	****	<0,0001
IgA_RBD vs. IgM_S1	-0,07066	-0,2353 to 0,09397	No	ns	0,8980
IgA_RBD vs. IgM_N	-0,2745	-0,4911 to -0,05796	Yes	**	0,0042
IgA_RBD vs. IgM_RBD	-0,1669	-0,3254 to -0,008451	Yes	*	0,0318
IgM_S1 vs. IgM_N	-0,2039	-0,3967 to -0,01103	Yes	*	0,0307
IgM_S1 vs. IgM_RBD	-0,09625	-0,1697 to -0,02277	Yes	**	0,0027
IgM_N vs. IgM_RBD	0,1076	-0,06557 to 0,2808	No	ns	0,5460

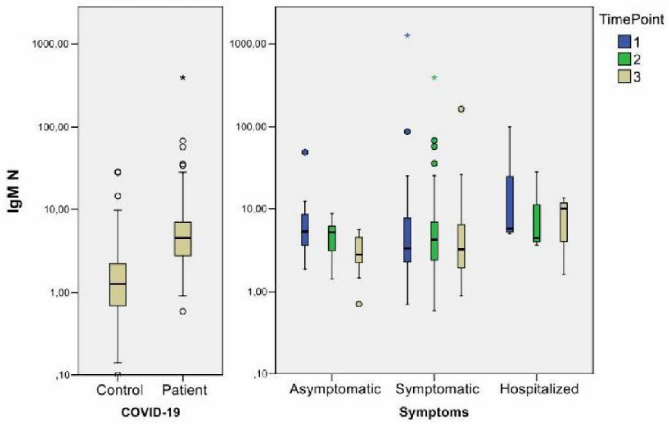
IgM, IgA , IgG to Spike S1 kinetics (FFX)

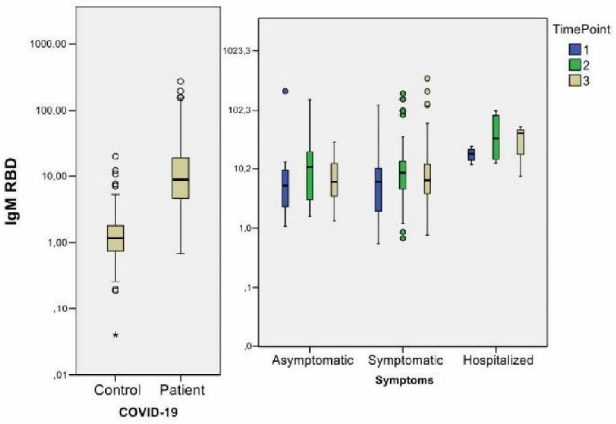


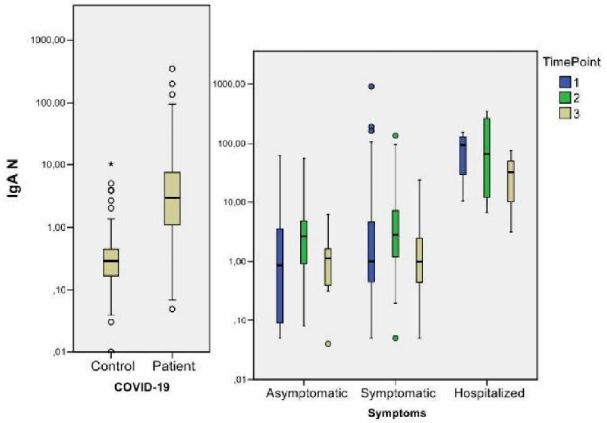


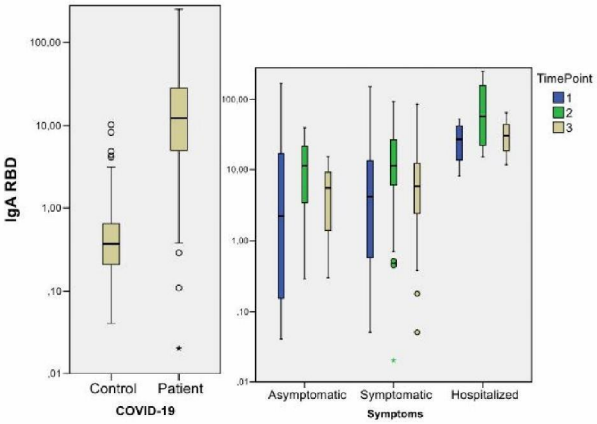


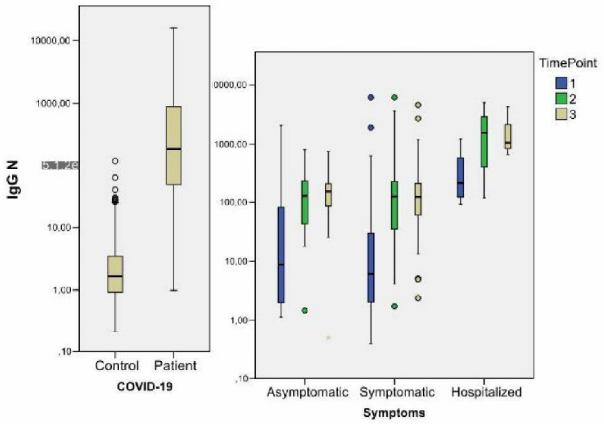
IgA en IgM inductie gebeurt sneller
In hopsitalized cases

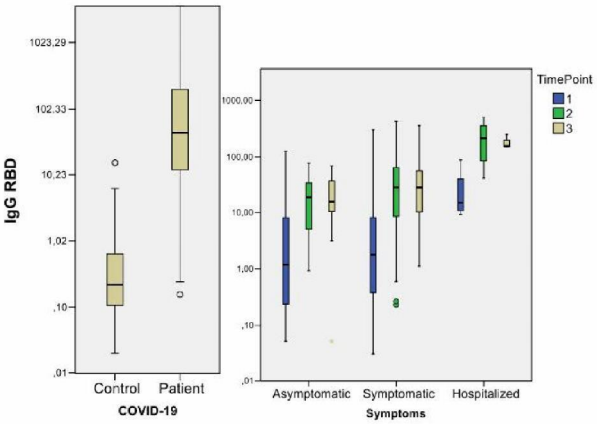

IgM N
1000,00
100,00
10,00
1,00
,10
Control
Patient
COVID-19
1000,00
100,00
10,00
1,00
,10
Asymptomatic
Symptomatic
Hospitalized
Symptoms
TimePoint
1
2
3


IgM RBD
1000,00
100,00
10,00
1,00
,10
,01
Control
Patient
COVID-19
1023,3
102,3
10,2
1,0
,1
,0
Asymptomatic
Symptomatic
Hospitalized
Symptoms
TimePoint
1
2
3

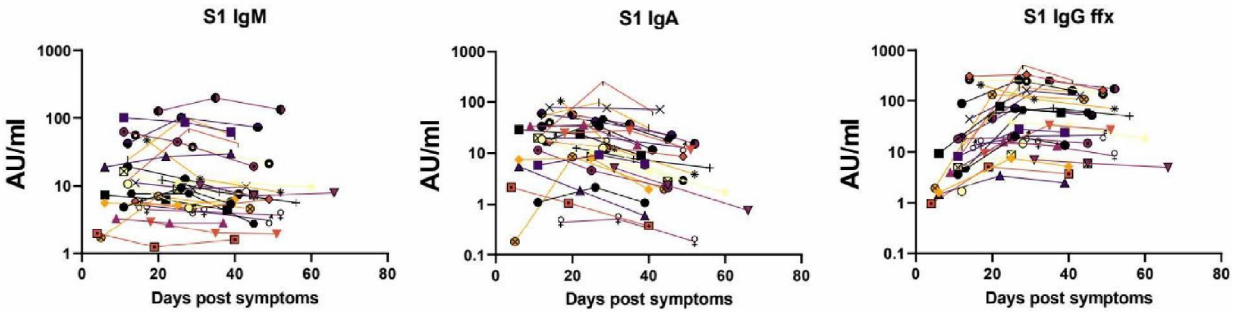

IgA N
1000,00
100,00
10,00
1,00
,10
,01
Control
Patient
COVID-19
1000,00
100,00
10,00
1,00
,10
,01
Asymptomatic
Symptomatic
Hospitalized
Symptoms
TimePoint
1
2
3

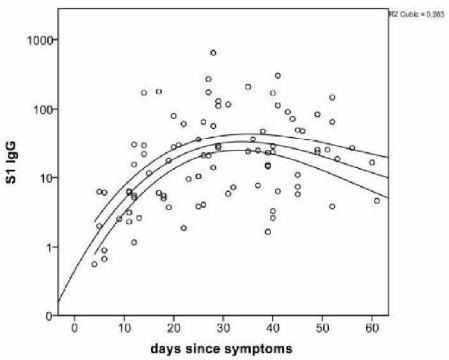

IgA RBD
100,00
10,00
1,00
,10
,01
Control
Patient
COVID-19
100,00
10,00
1,00
,10
,01
Asymptomatic
Symptomatic
Hospitalized
Symptoms
TimePoint
1
2
3

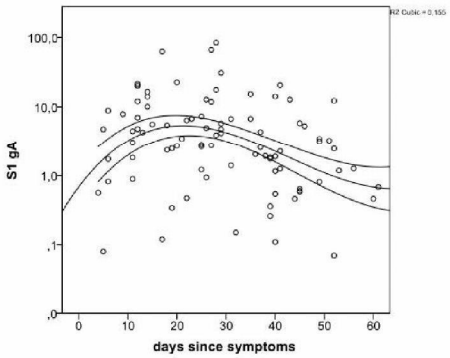

IgG N
10000,00
1000,00
100,00
10,00
1,00
,10
Control
Patient
COVID-19
1000,00
100,00
10,00
1,00
,10
Asymptomatic
Symptomatic
Hospitalized
Symptoms
TimePoint
1
2
3

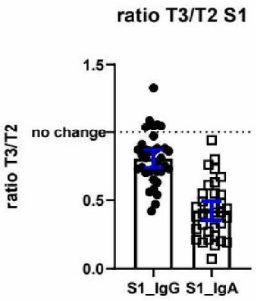

IgG RBD
1023,29
102,33
10,23
1,02
,10
,01
Control
Patient
COVID-19
1000,00
100,00
10,00
1,00
,10
,01
Asymptomatic
Symptomatic
Hospitalized
Symptoms
TimePoint
1
2
3

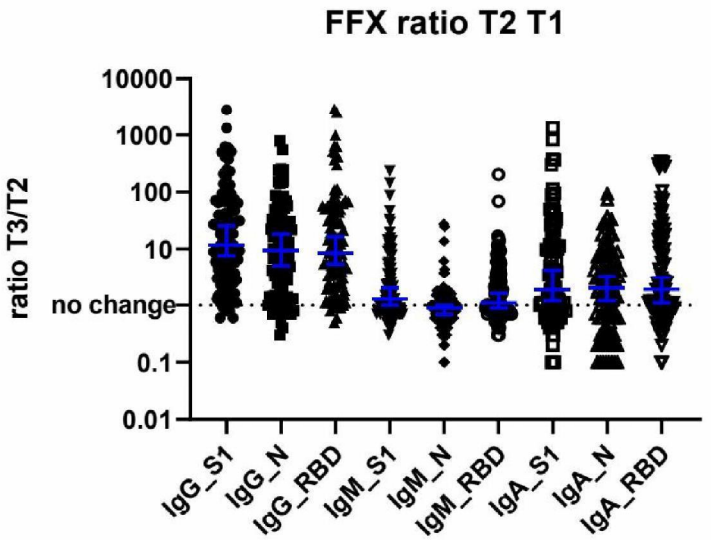
Decay rate of IgG and IgA

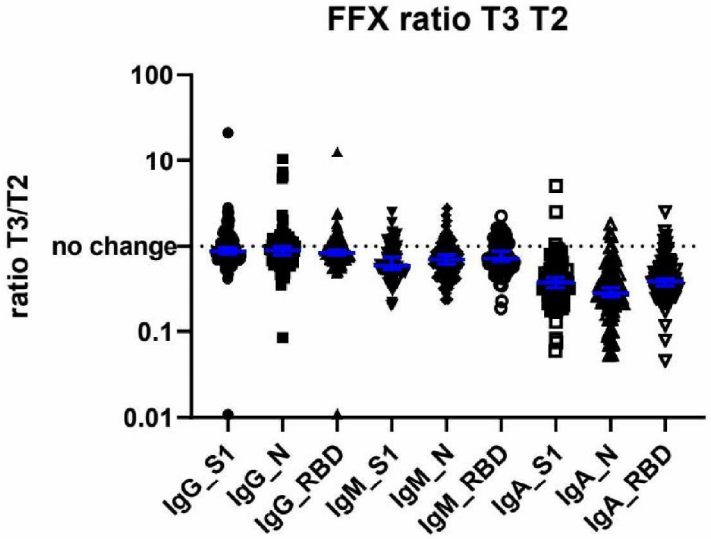


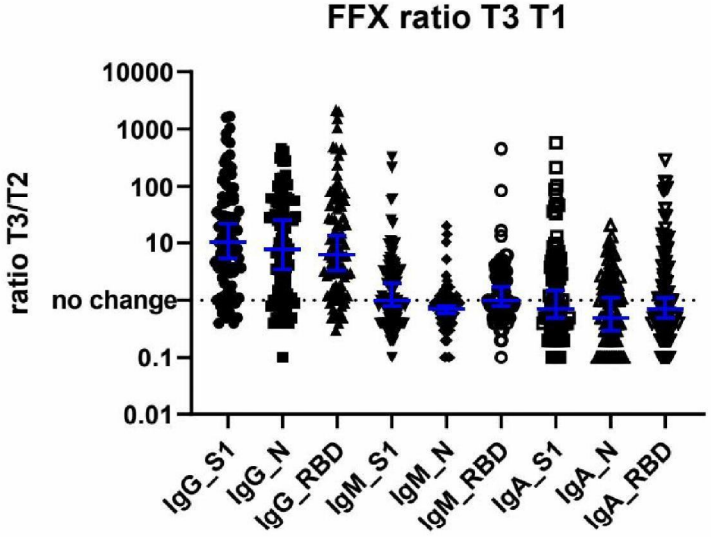






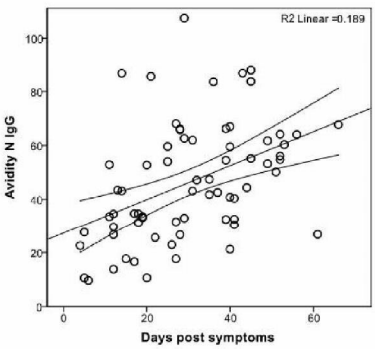

FFX ratio T2 T1
ratio T3/T2
10000
1000
100
10
no change
0.1
0.01
IgG_S1
IgG_N
IgG_RBD
IgM_S1
IgM_N
IgM_RBD
IgA_S1
IgA_N
IgA_RBD

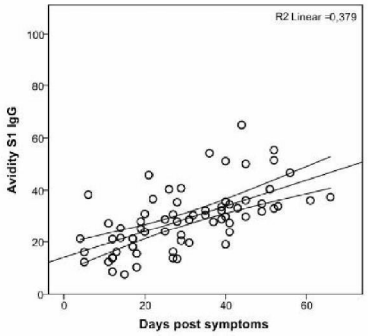

FFX ratio T3 T2
ratio T3/T2
100
10
no change
0.1
0.01
IgG_S1
IgG_N
IgG_RBD
IgM_S1
IgM_N
IgM_RBD
IgA_S1
IgA_N
IgA_RBD

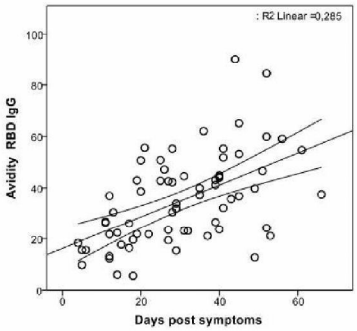

FFX ratio T3 T1
ratio T3/T2
10000
1000
100
10
no change
0.1
0.01
IgG_S1
IgG_N
IgG_RBD
IgM_S1
IgM_N
IgM_RBD
IgA_S1
IgA_N
IgA_RBD

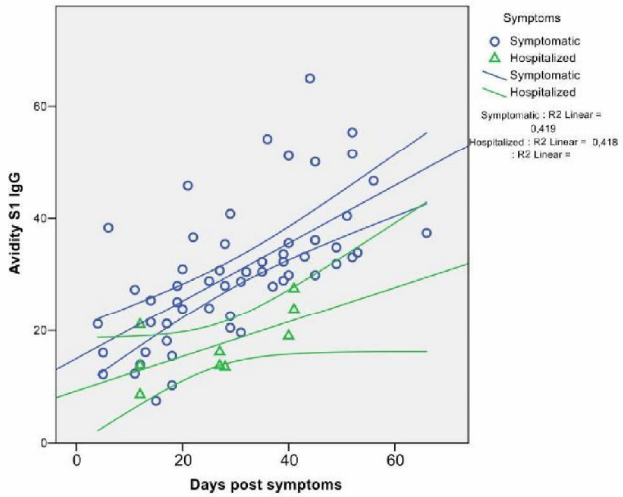
FFX

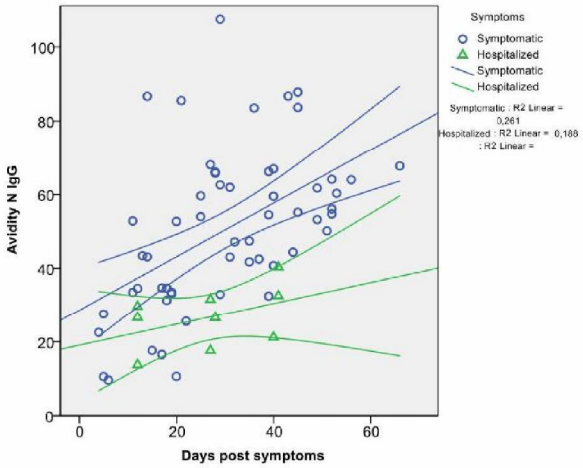
Development of avidity

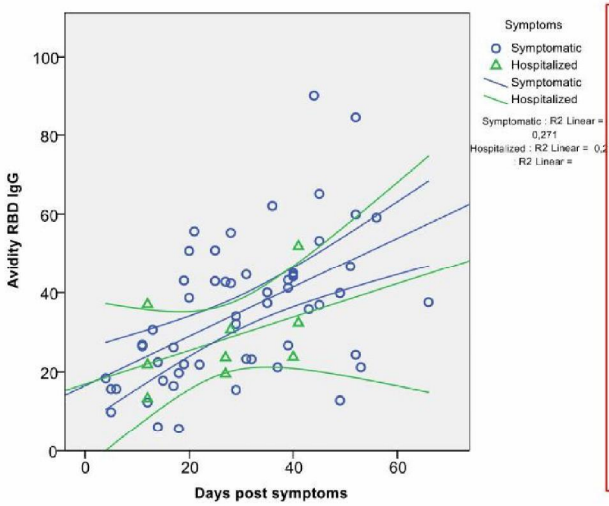


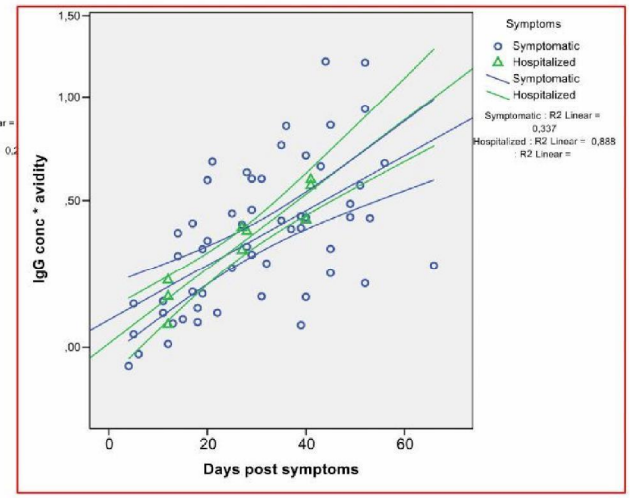






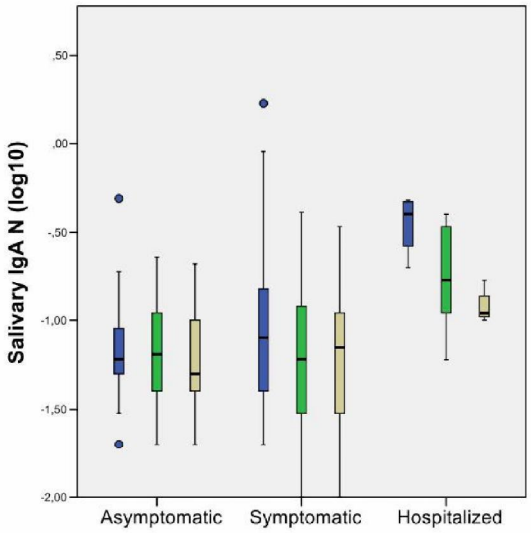


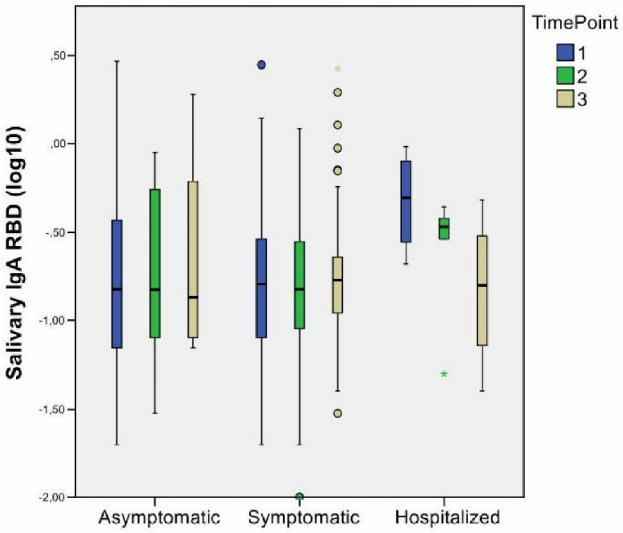


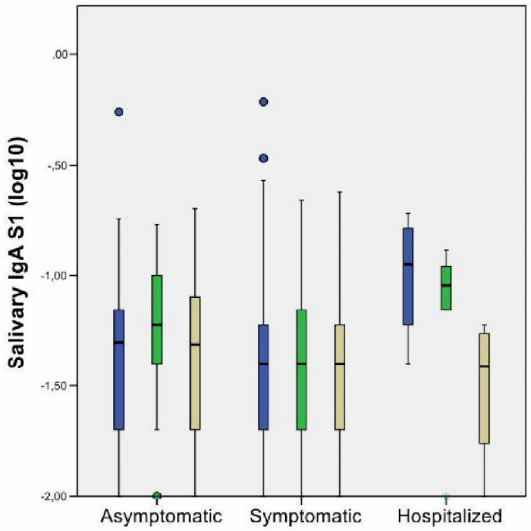


Maybe lower overall avidity in hospitalized patients.
Corrected for concentration, no difference

Salivary IgA

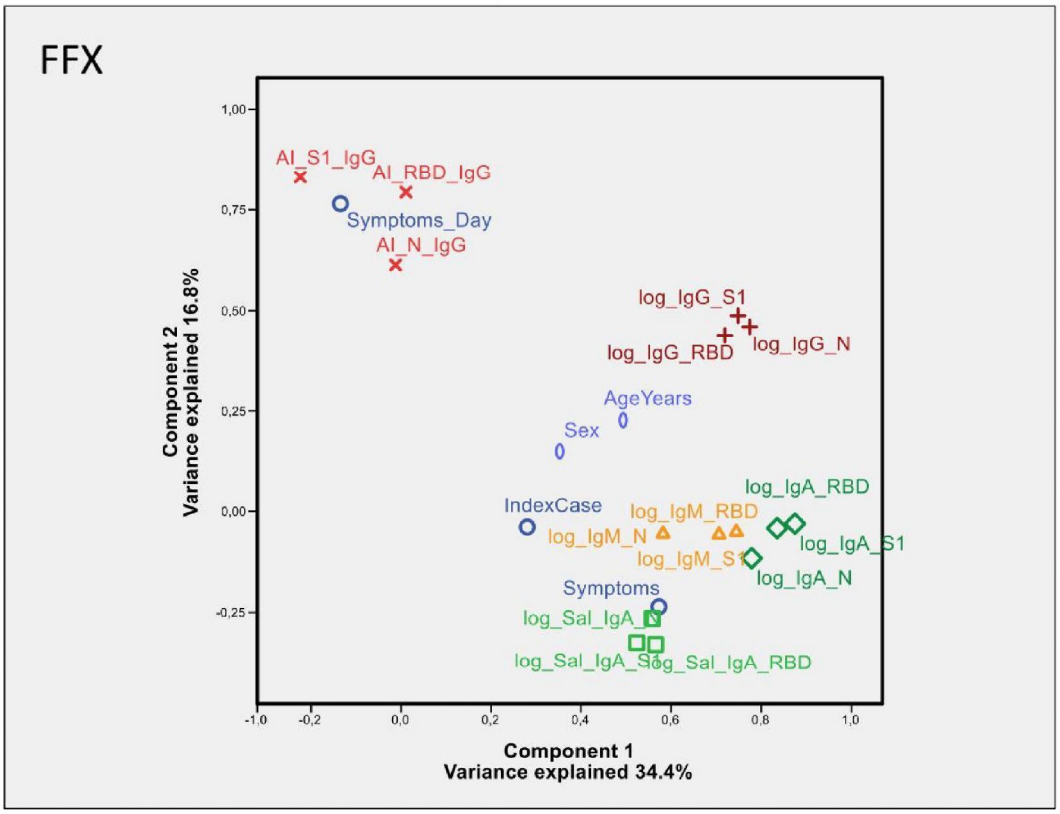






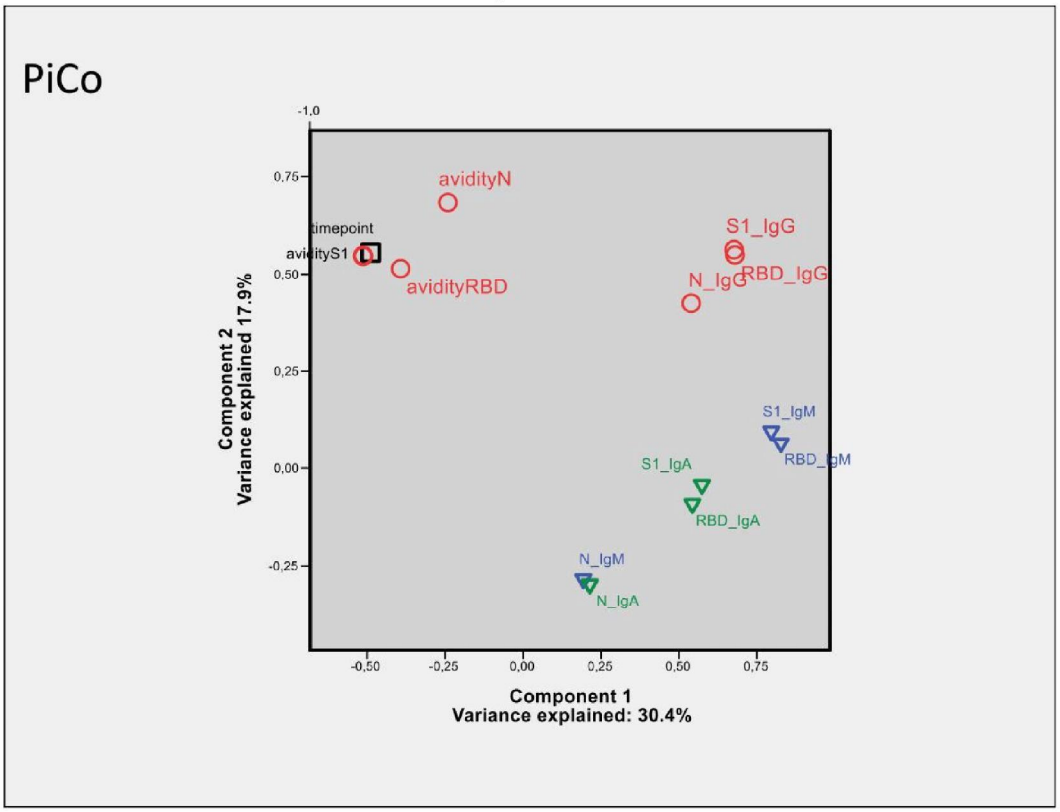
Component Plot

FFX



Component Plot

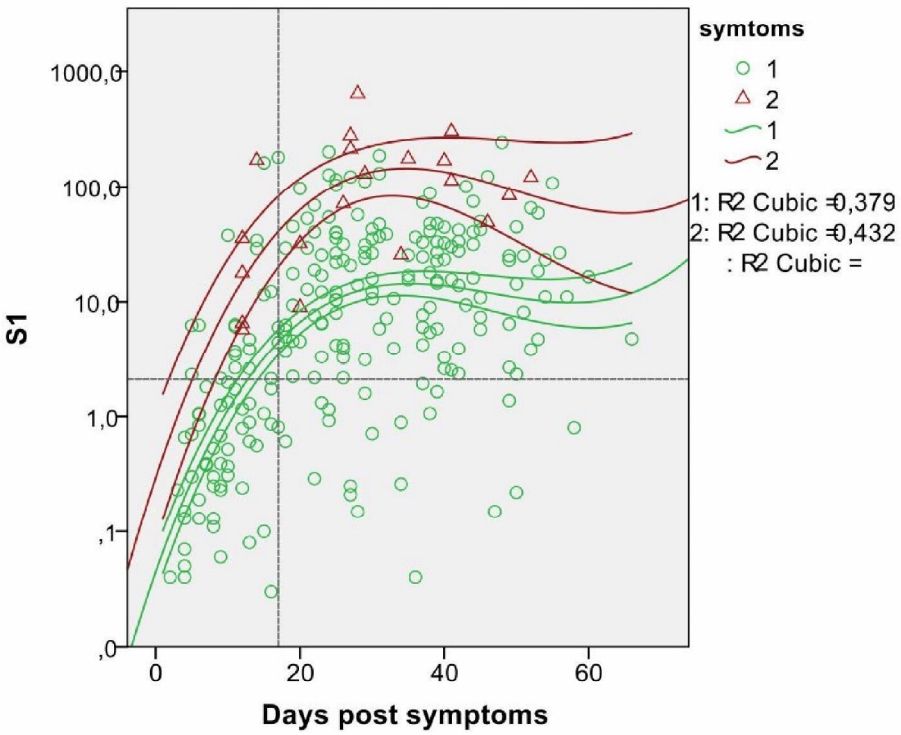
PiCo



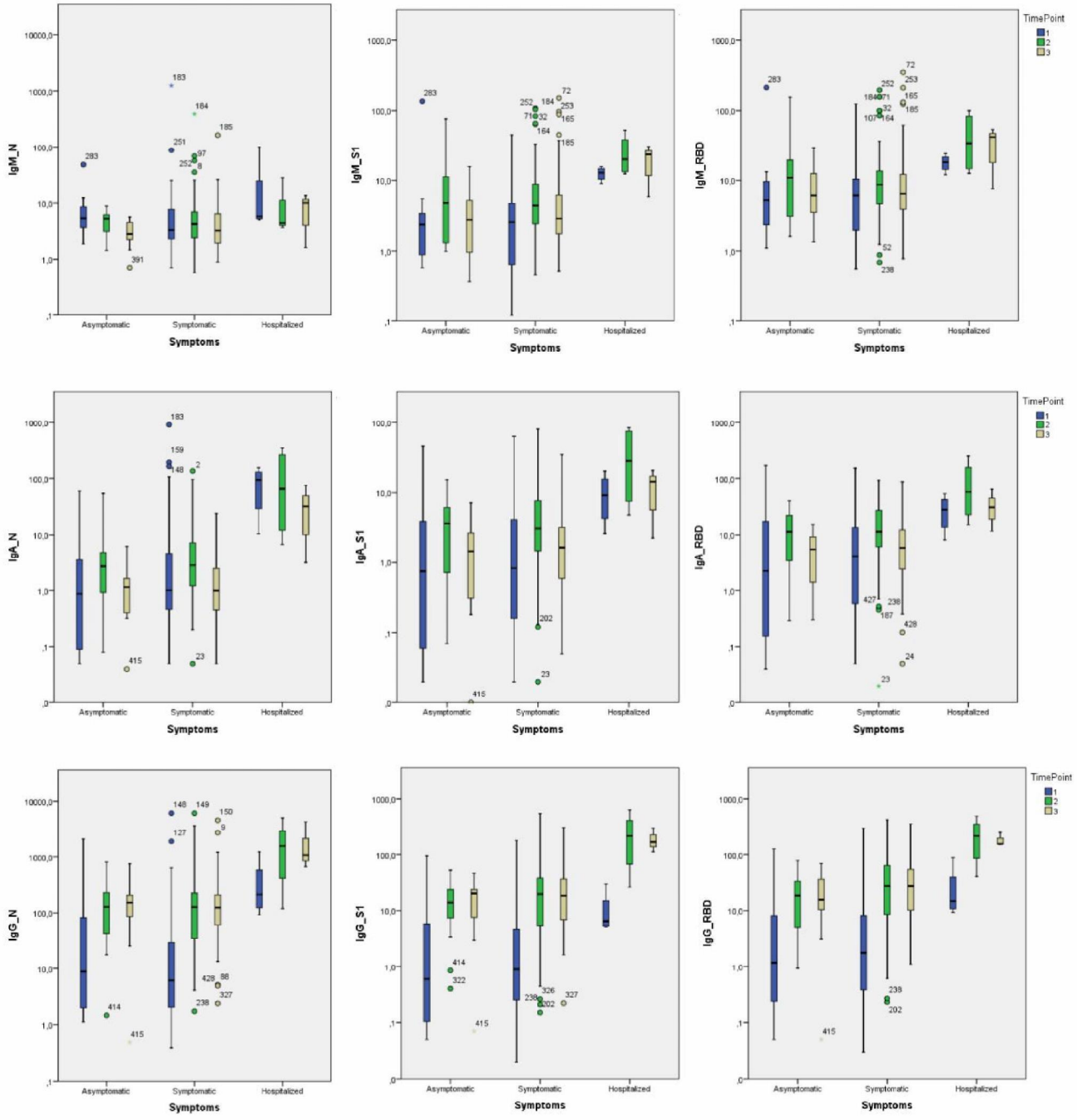
Summary

- Rapid decay of IgA (and IgM)
- Rapid decay of anti-N antibodies
- Spike S1 IgG most persistent
- All concentrations decrease, avidity increases

- Two independent studies, One message
- Joined effort > joined CiB-wide (EPI IDS IIV) publication?


symtoms
1
2
1
2
1: R2 Cubic =0,379
2: R2 Cubic =0,432
: R2 Cubic =
S1
1000,0
100,0
10,0
1,0
,1
,0
0
20
40
60
Days post symptoms

IgM, IgA , IgG to Spike S1 kinetics (FFX)



IgA en IgM inductie gebeurt sneller
In hopsitalized cases

Development of aviditiy