STUDIO GEROVAX - VACCINAZIONE ANTI-SARS-COV-2 NELLE RSA: DATI FINALI
Monitoraggio Immunologico

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Studio GeroVax - Scopo

1. valutare sicurezza ed efficacia clinica della vaccinazione anti-SARS-CoV-2 in RSA (**Monitoraggio Clinico**)
2. identificare la durata della protezione indotta dalla vaccinazione attraverso il *monitoraggio dell'andamento del titolo anticorpale* e della risposta cellulo mediata (**Monitoraggio immunologico**)

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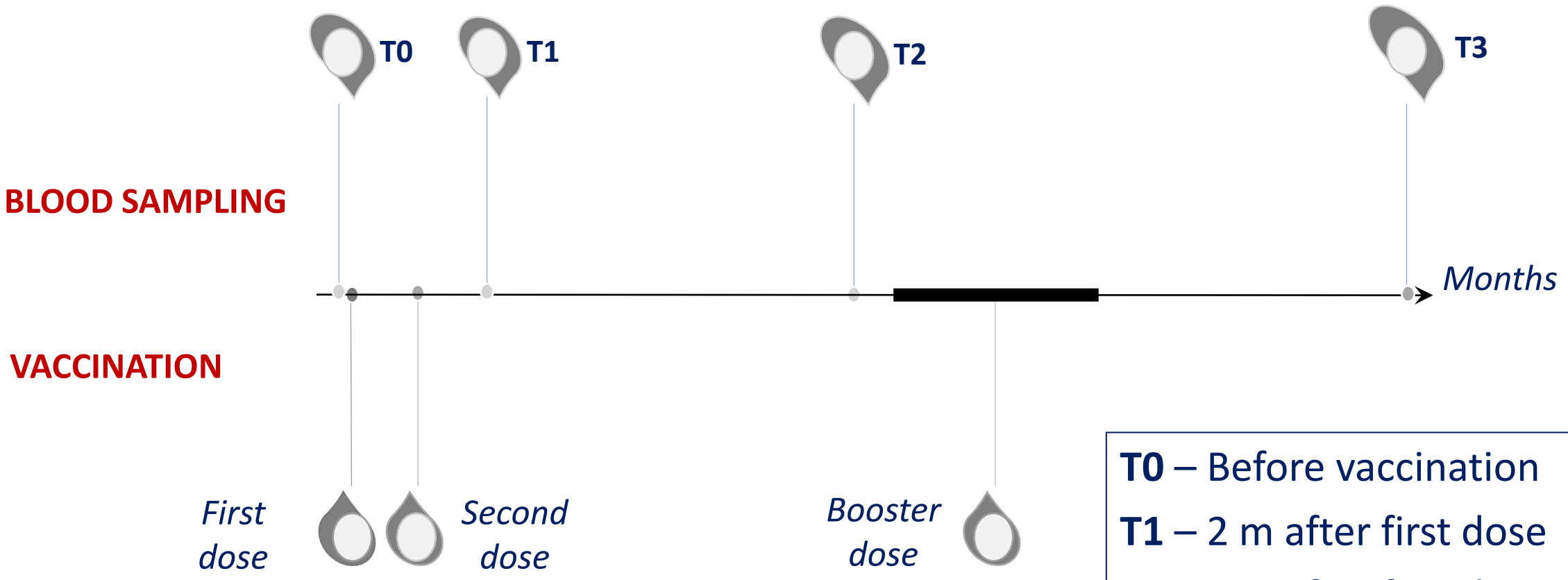
Timeline



T0 – Before vaccination

T1 – 2 m after first dose

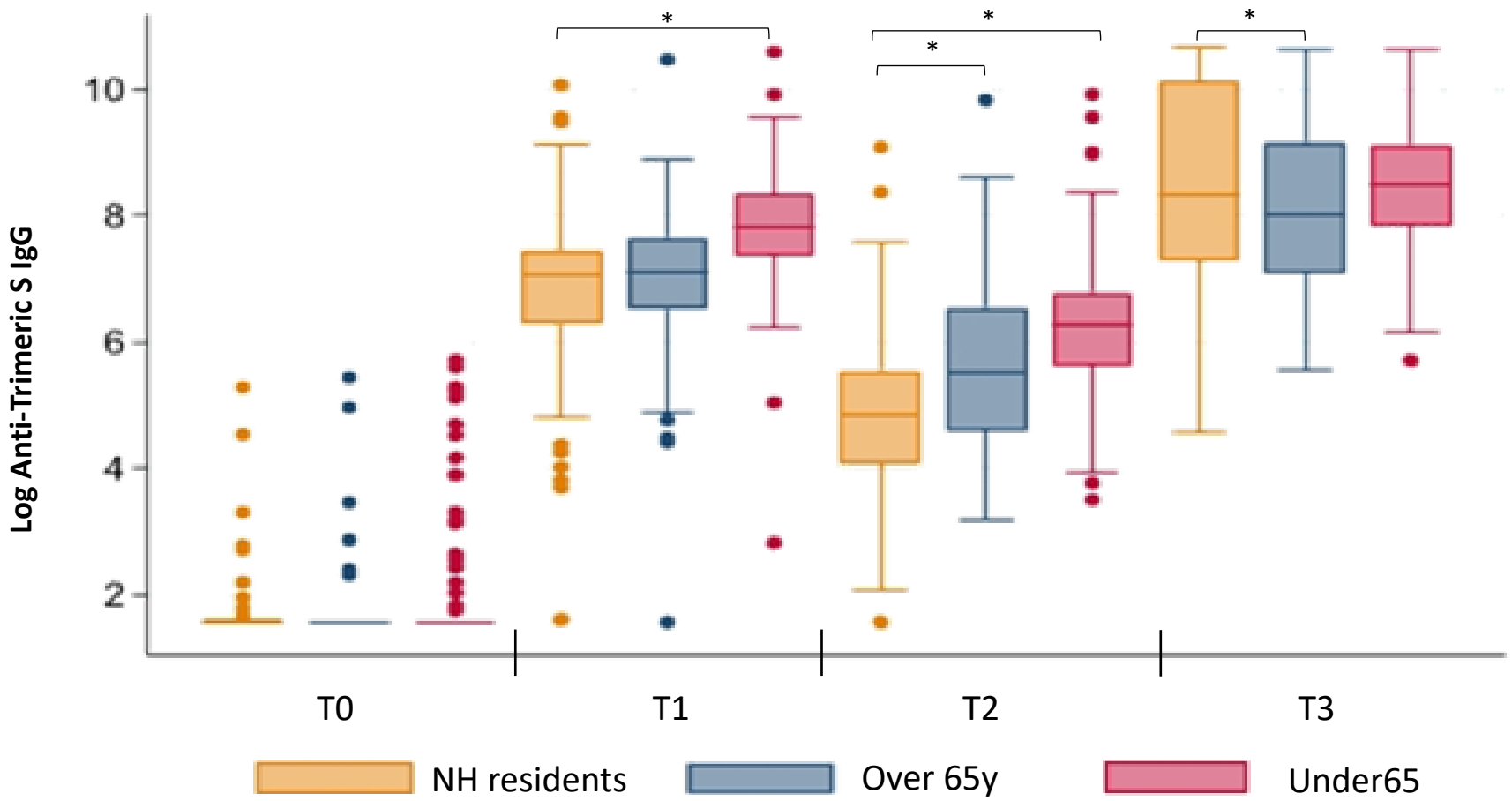
T2 – 6 m after first dose

T3 – 12 m after first dose

Campione

		Whole sample (n=395)
Age	≥80 years	264 (67%)
Sex	Female	270 (68%)
Type of vaccine	BNT162b2	344 (87%)
	mRNA-1273	51 (13%)
Chronic diseases	Dementia	213 (54%)
	Ischemic Heart Disease	114 (29%)
	Diabetes	65 (16%)
	COPD	63 (16%)
	Atrial fibrillation	30 (7.5%)
	Stroke	43 (11%)
	Cardiac failure	29 (7%)
	Cancer	23 (6%)
Disability	Moves with wheelchair	175 (44%)
	Bedridden	55 (14%)

Residenti RSA vs. popolazione generale



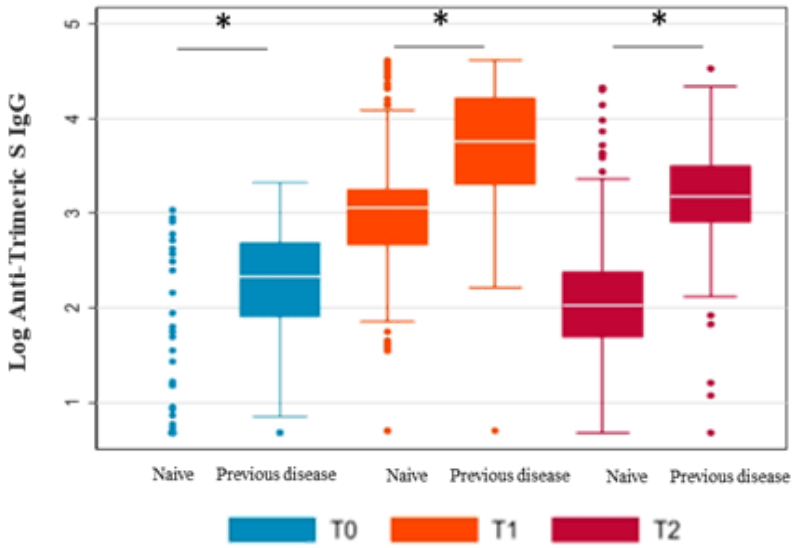
*p<0.05

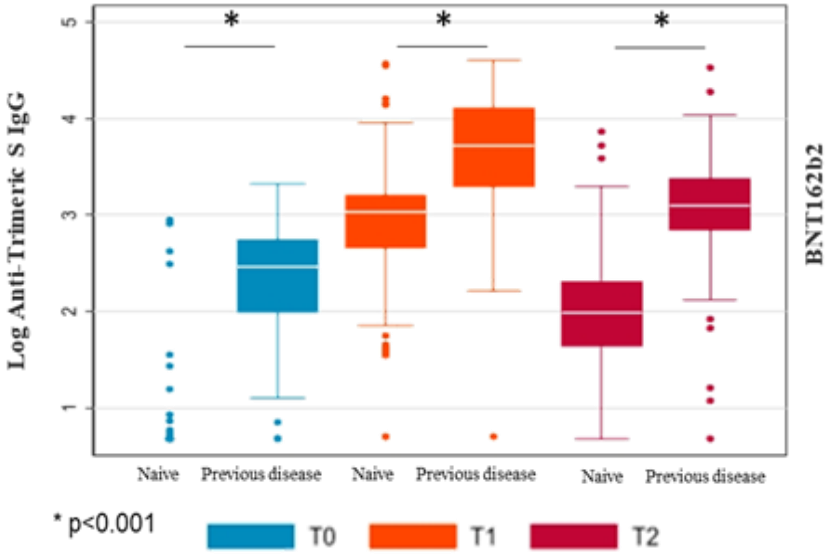
Determinanti risposta anticorpale

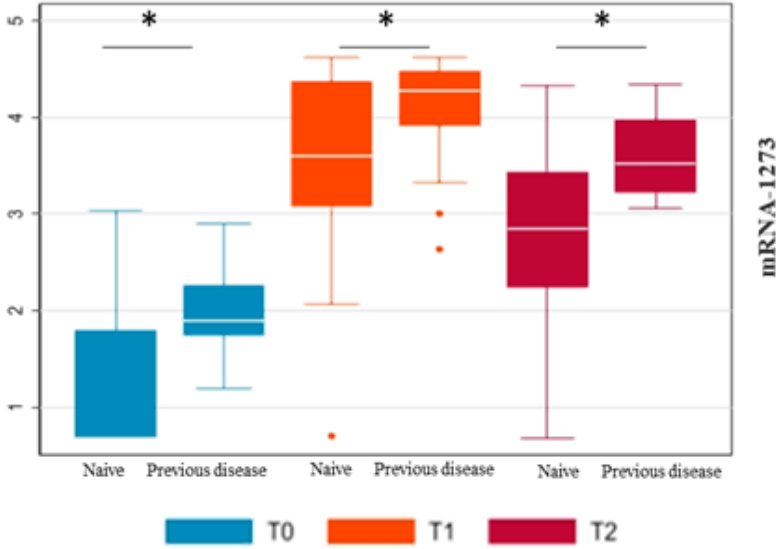
- Precedente infezione

Concentrazione anticorpi anti-trimeric Spike IgG in base a storia di infezione da SARS-CoV-2 N=365

T0 – prevaccino
T1 – 2 mesi dopo prima dose
T2 – 6 mesi dopo prima dose







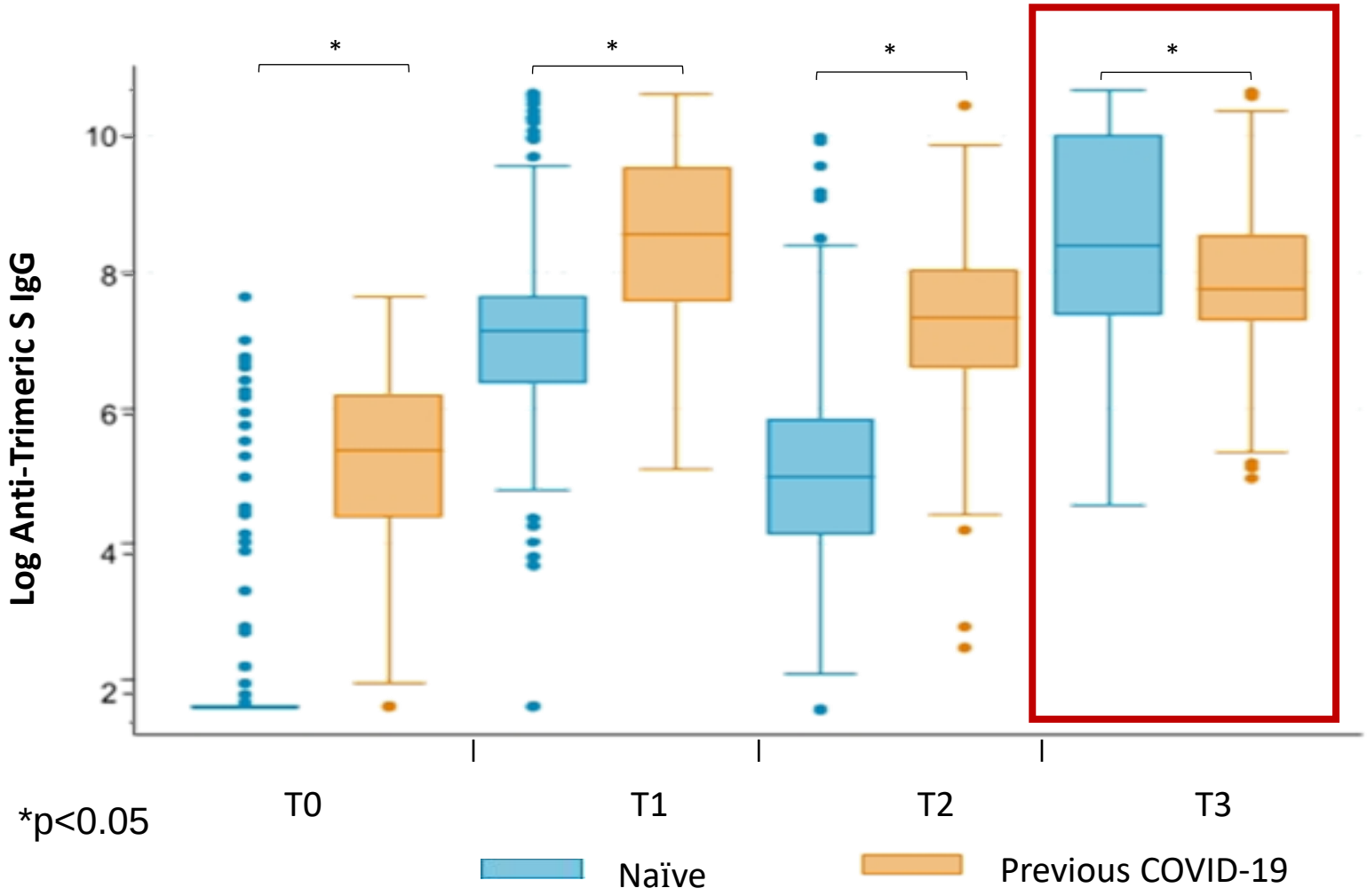
Fedele G et al. Aging Clin Exp Res. 2022

	Anti-S IgG serum concentration, Geometric Means (SE), BAU/mL								
	Before vaccination (T0)			2 months after first dose (T1)			6 months after first dose (T2)		
	GM	SE	p Value	GM	SE	p Value	GM	SE	p Value
Prior SARS-CoV-2 infection									
Number of doses									
1 dose (n=118)	207.5	31.5	0.004	4400.7	696.7	0.02	1182.9	175.2	0.006
2 doses (n=21)	80.8	25.7		9639.6	3204.2		2847.4	885.4	
Prior SARS-CoV-2 infection and 1 dose									
Months from diagnosis									
≤4 months (n=80)	233.6	41.2	0.05	4109.8	738.5	0.02	938.9	160.2	0.001
≥5 months (n=33)	147.7	30.7		7108.7	1496.0		2074.2	414.5	

Residents with prior SARS-CoV-2 infection receiving two vaccine doses presented significantly higher antibody concentration at T1 and T2. A longer interval between previous infection and vaccination was associated with a better antibody response over time.

Fedele G et al. Aging Clin Exp Res. 2022

Precedente infezione e risposta anticorpale



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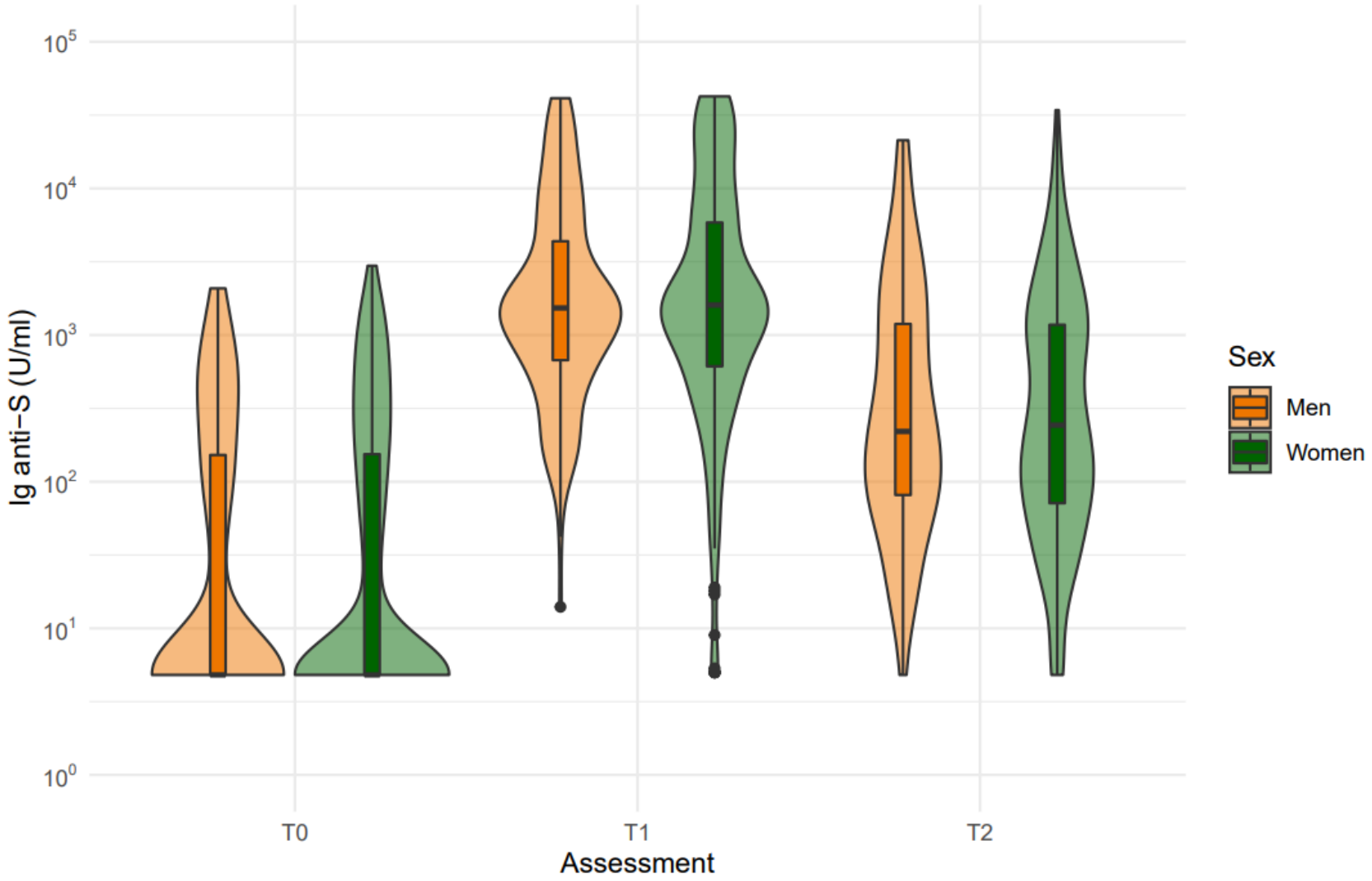
Determinanti risposta anticorpale

- Precedente infezione
- Sesso

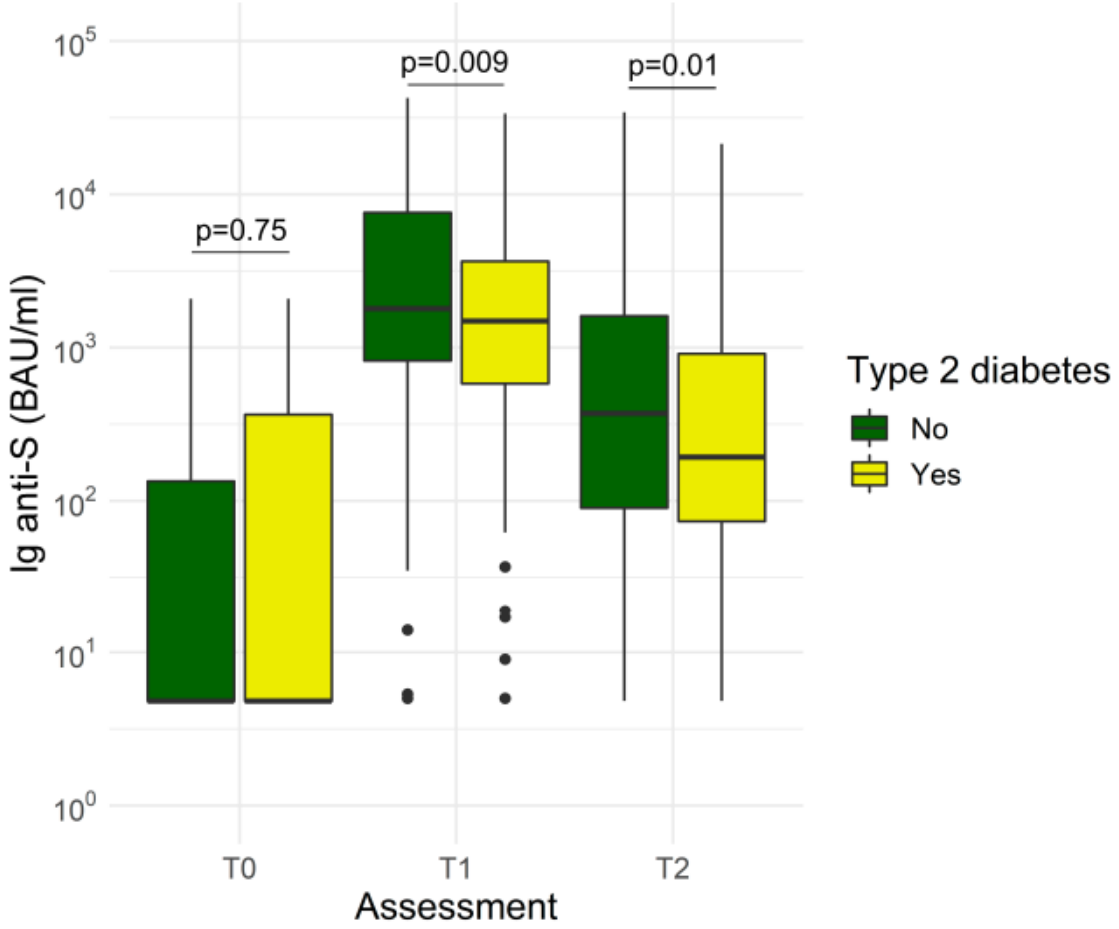
Violin plots on the anti-S antibody levels in men and women before vaccination and after 1 and 6 months



Determinanti risposta anticorpale

- Precedente infezione
- Sesso
- Patologie

Diabetes Affects Antibody Response to SARS-CoV-2 Vaccination in Older Residents of Long-Term Care Facilities: Data From the GeroCovid Vax Study



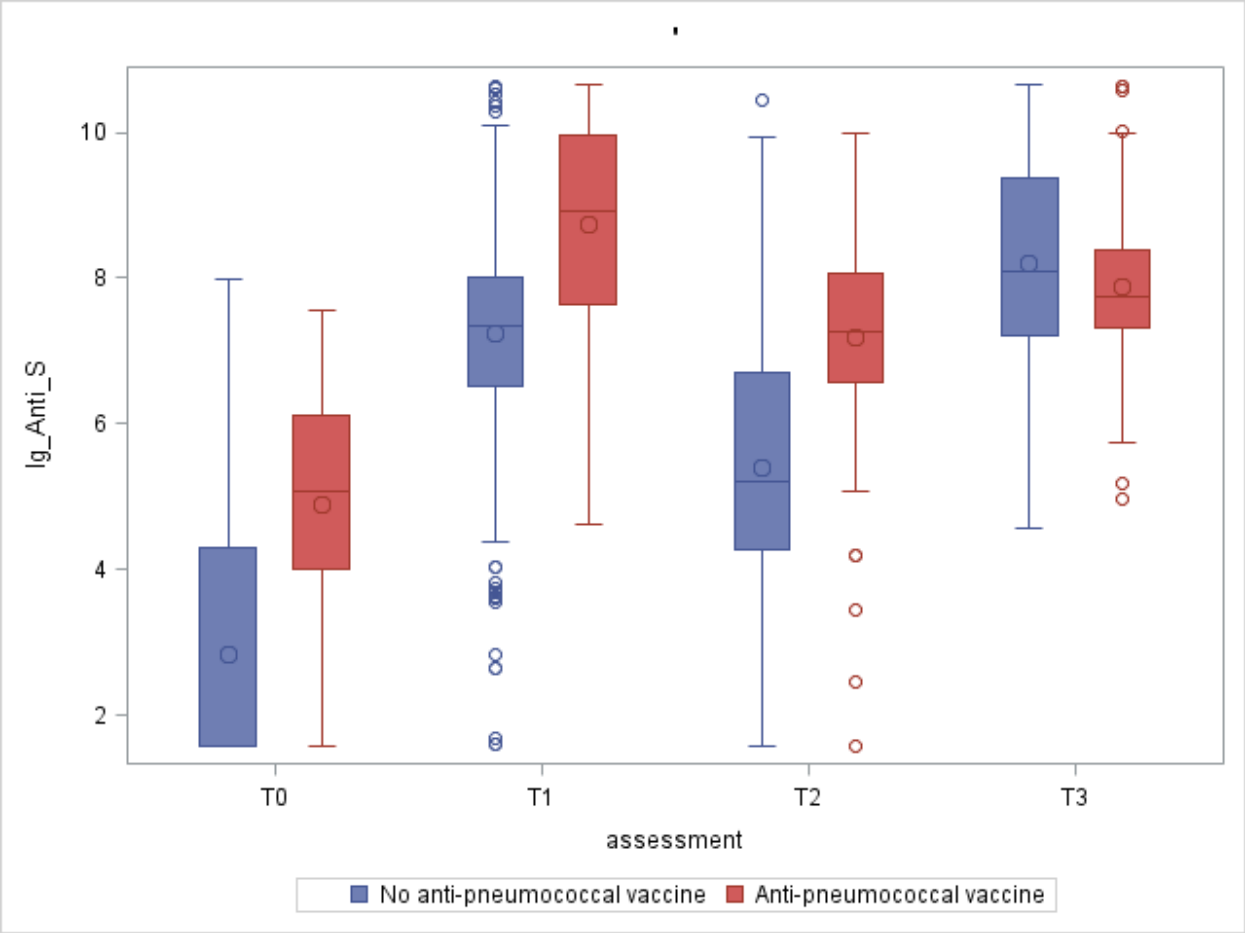
- **Older residents of LTCFs with diabetes tended to have weaker antibody response to COVID-19 vaccination**.
- **Insulin treatment might buffer this effect** and establish humoral immunity similar to that in individuals without diabetes.

Virgilio E, Trevisan C et al. Diabetes Care 2022

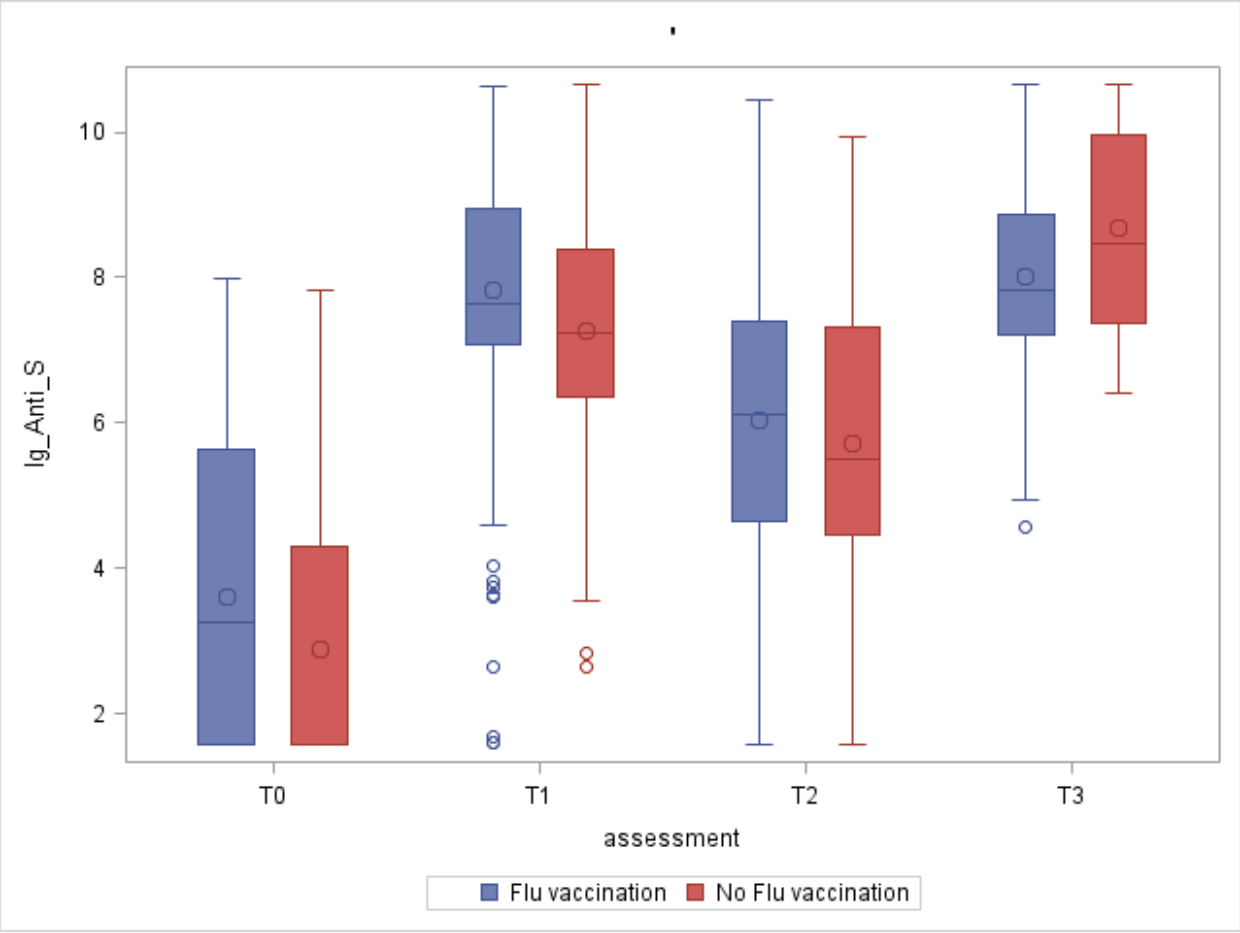
Determinanti risposta anticorpale

- Precedente infezione
- Sesso
- Patologie
- Altre vaccinazioni

Vaccinazione anti-pneumococcica



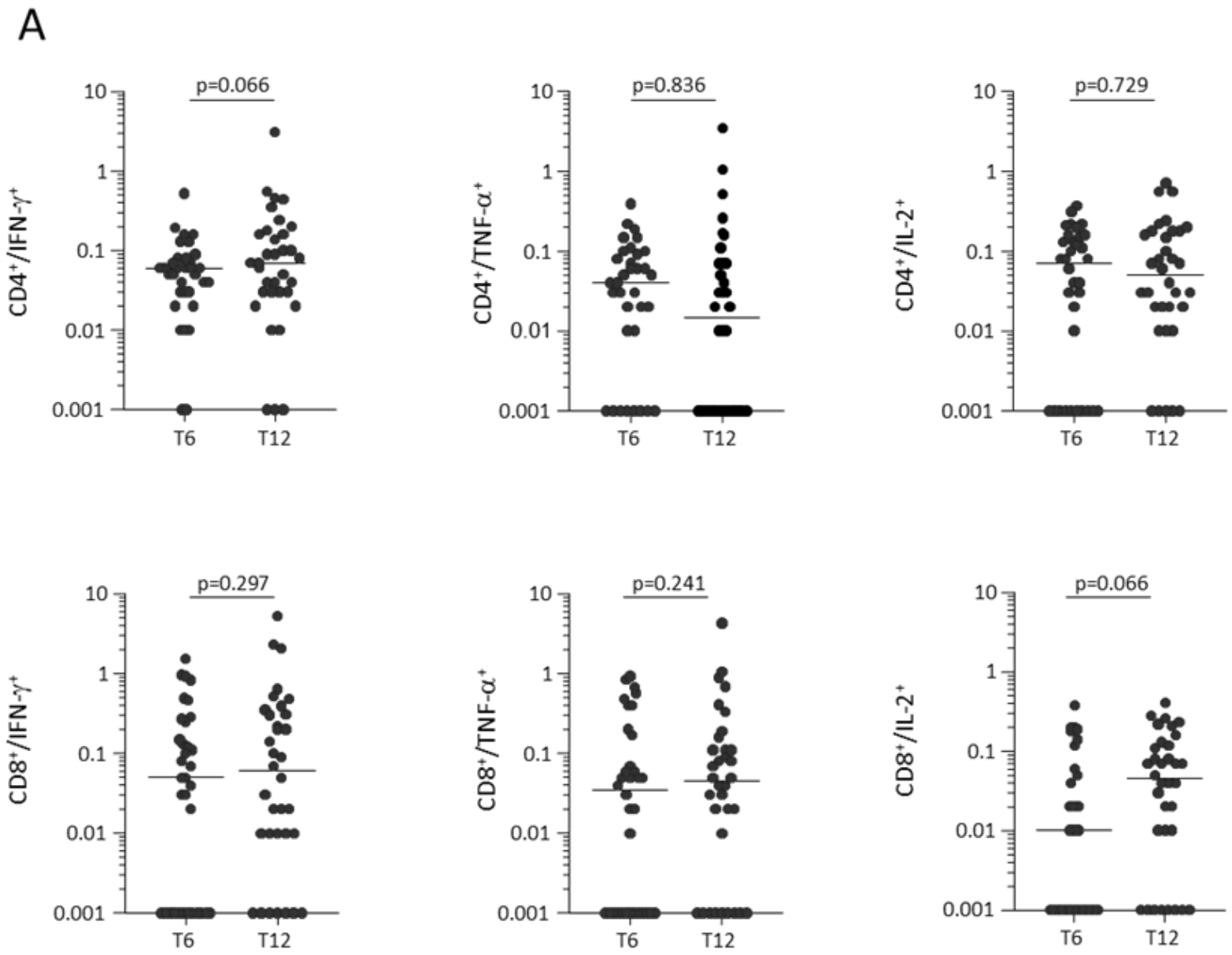
Vaccinazione anti-influenzale



Immunità cellulo mediata

- 34 residents were assessed for vaccine-induced immunity **pre-booster** and 12 months after the first BNT162b2 vaccine dose (**post-booster**)
- Cell-mediated immunity was assessed at by intracellular cytokine staining of peripheral blood mononuclear cells stimulated in vitro with peptides covering the immunodominant sequence of SARS-CoV-2 Spike protein. The simultaneous production of **IFN-γ**, **TNF-α** and **IL-2** was measured.

Fedele et al. JAMDA in press

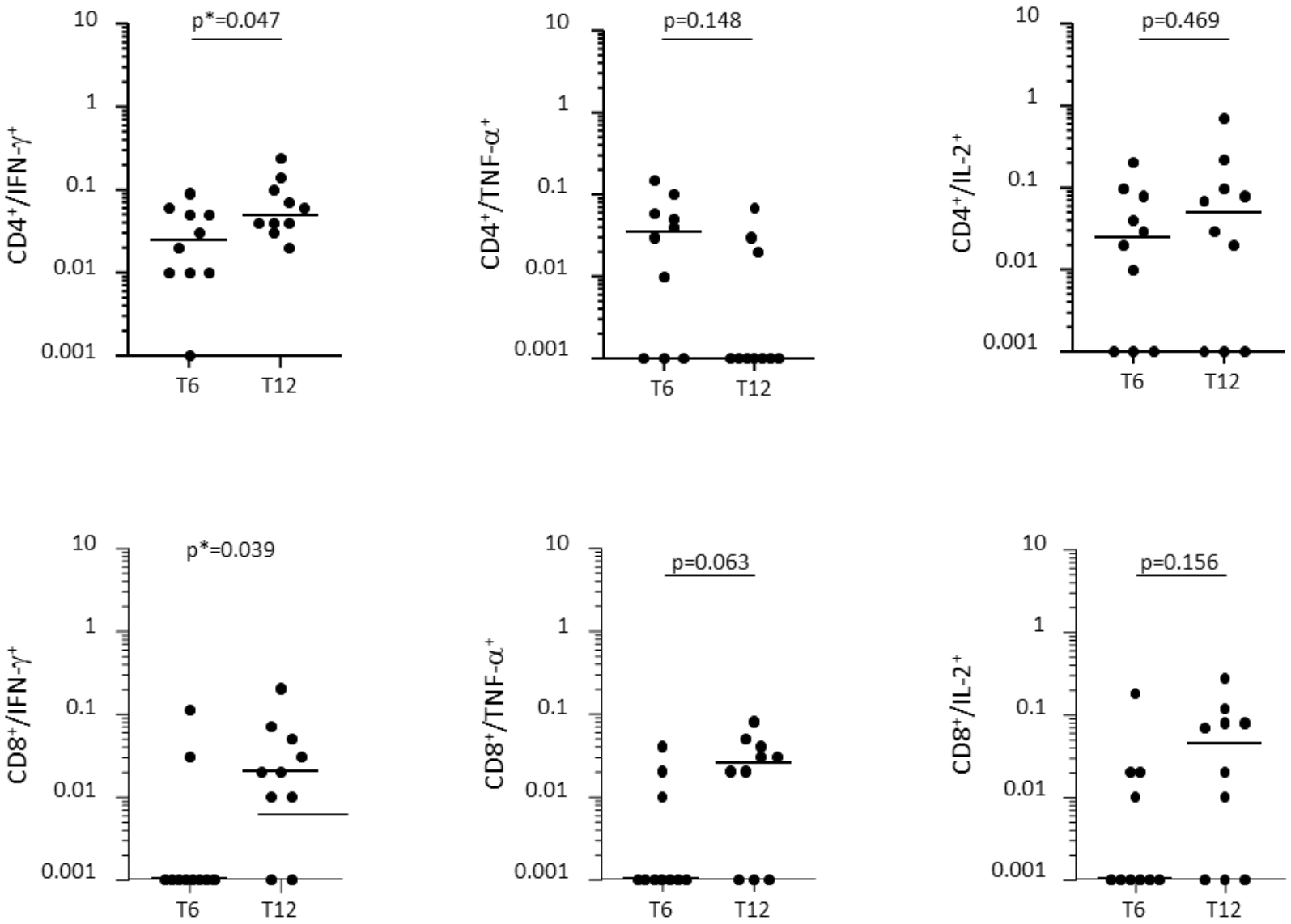


Immunità cellulo mediata

Before the booster vaccination, 31 out of 34 NH residents had a positive response to Spike. Post-booster, 28 out of 34 had a positive response.

Booster dose does not increase CMI

Fedele et al. JAMDA in press



Booster dose increase CMI in naive patients

Naive patients only

Fedele et al. JAMDA in press

Associazione tra risposta anticorpale e cellulo mediata

		Anti-S IgG in BAU/mL			
		T6		T12	
		GM	p -value	GM	p -value
CD4	Low or non-responders	496.50	**0.047**	4722.06	0.7953
	2+ cytokines	1282.50		4188.09	
CD8	Low or non-responders	496.21	**0.0059**	6124.18	0.1415
	2+ cytokines	1719.86		3165.29	

Fedele et al. JAMDA in press

Associazione tra risposta anticorpale e cellulo mediata

	T6		T12	
	rs	p -value	rs	p -value
CD4 IFNg	**0.36**	**0.036**	-0.07	0.70
CD4 IL2	0.21	0.24	0.03	0.86
CD4 TFNa	0.04	0.80	-0.10	0.58
CD8 IFNg	**0.42**	**0.014**	-0.14	0.41
CD8 IL2	0.18	0.32	0.04	0.80
CD8 TFNa	0.39	0.02	-0.1	0.58

Fedele et al. JAMDA in press

Conclusioni

- Risposta immunitaria ridotta nei NH residents rispetto ad altra popolazione
- Molti fattori possono influenzare la risposta anticorpale
- Effetto tetto dopo 3 dosi?
- Componente cellulo-mediata e umorale in parte collegate