previous prevalence in the same clinic population studied after the first wave of the pandemic in Israel, which was 2.07% (accepted for publication). A lower rate of immunosuppression was found for positive SARS-CoV-2 IgG patients compared to negative serology patients (Table 1, $p=0.009$). There was also a trend for the subgroup of patients on biologic DMARDs (26.92% vs. 47% respectively, $p=0.06$).

Positive SARS-CoV-2 PCR test was reported and confirmed in 36 patients, of them 14 (38.89%) had negative serology. Patients who did not have antibodies had numerically more than double rates of glucocorticoids and bDMARDs treatment. The time between positive PCR test to positive serology test was significantly shorter (mean±standard deviation 75.57±40.44 days) than the time between positive PCR to negative serology test (130.79±86.47 ($p=0.04$)) (Table 1 and Figure 1) suggesting a fading of the antibody response with time.

Conclusion: The prevalence of SARS-CoV-2 IgG was 4.6% in a population of AIIRD patients from a single tertiary medical center in Israel. SARS-CoV-2 seroprevalence tended to be low among AIIRD patients on immunosuppressive treatment, including in patients with a confirmed history of positive SARS-CoV-2 PCR, similar to other studies [3].

As in individuals without AIIRD, the mounting of SARS-CoV-2 IgG seems to fade with time.

Larger studies are needed to confirm the potential effect of immunosuppression on the antibody response in AIIRDs.

Table 1. Demographic and clinical characteristics of patients with negative and positive SARS-CoV-2 IgG, and in the subgroup with positive SARS-CoV-2 PCR test

	Total population (n=560)			Positive PCR population (n=36)		
	Negative IgG (n=534)	Positive IgG (n=26)	P	Negative IgG (n=14)	Positive IgG (n=22)	P
Female n (%)	360 (67.42)	22 (84.62)	0.08	10 (71.43)	18 (81.82)	0.68
Age median (95% CI)	57 (54.95-57.58)	52.5 (46.55-58.6)	0.23	42 (35.46-53.11)	52.5 (47.62-60.65)	0.06
No. of comorbidities mean±STD (95%CI)	0.88±1.15 (0.78-0.98)	0.92±1.2 (0.44-1.41)	0.86	0.79±1.12 (0.14-1.43)	0.96±1.3 (0.4-1.51)	0.68
AIIRD treatments n(%)						
Total immunosuppression	401 (75.09)	13 (50)	0.009	11 (78.57)	12 (54.54)	0.175
GC	113 (21.16)	3 (11.54)	0.32	5 (35.71)	3 (13.64)	0.32
csDMARDs	257 (48.13)	13 (50)	1	7 (50)	13 (59.09)	0.73
bDMARDs	251 (47)	7 (26.92)	0.06	9 (64.29)	7 (31.82)	0.09
Anti CD-20	36 (6.74)	0	0.4	1 (7.14)	0	0.39

SARS-CoV-2, severe acute respiratory syndrome-coronavirus-2; IgG, immunoglobulin G; PCR, polymerase chain reaction; n, number; 95%CI, 95% confidence interval; GC, glucocorticoids; csDMARDs, conventional synthetic disease modifying antirheumatic drugs; bDMARDs, biologic disease modifying antirheumatic drugs.

Figure 1. Kaplan-Meier plot of SARS-CoV-2 IgG survival in days from SARS-CoV-2 PCR test
There were 160 negative SARS-CoV-2 PCR tests with 2 positive serologies among them, and 35 positive SARS-CoV-2 PCR tests with 21 positive serologies among them (for 3 patients time between PCR test and serology was unknown). The median survival of SARS-CoV-2 serology in PCR positive patients was 110 days and was not applicable to PCR negative patients ($p<0.0001$).

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REAL WORLD POPULATION-BASED ASSESSMENT OF COVID-19 OUTCOMES AMONG RHEUMATOID ARTHRITIS PATIENTS USING BIOLOGIC OR SYNTHETIC DMARDs

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Background: While some risk factors for severe COVID have been identified for patients with rheumatic diseases,¹ few studies have investigated whether outcomes differ based on the type of rheumatoid arthritis (RA) treatment. Most existing reports have been limited to individual centers or voluntary reporting registries.^{2,3}

Objectives: To compare the occurrence of hospitalizations following COVID-19 diagnosis among patients with RA treated with various classes of DMARDs.

Methods: A cohort of patients with confirmed COVID-19 (ICD10 diagnosis code or positive PCR or antigen test result) were identified within a large US electronic health record (EHR) dataset (Optum, Inc.) during the time period Feb 1, 2020 through Oct 14, 2020. From these, we identified RA patients (ICD10 RA diagnosis code) with treatment (most recent of JAK inhibitor [JAKI], biologic [bDMARD] or conventional synthetic [csDMARD] only) within the 12 months prior to COVID-19 diagnosis (i.e., index). The primary outcome was any hospitalization on or within 30 days after COVID-19 diagnosis. Multivariable logistic regression models compared users of JAKi's to non-TNFi bDMARDs and csDMARDs (separately), as well as users of TNFi's to non-TNFi bDMARDs and csDMARDs (separately), and were adjusted for age, gender, index month and baseline corticosteroid use. Sensitivity analyses included restriction of prevalent treatment use to within 180 days prior to COVID-19 diagnosis and restriction of csDMARDs to a group without hydroxychloroquine or chloroquine.

Results: The study included 910 RA patients on DMARD treatment who were diagnosed with COVID-19 (mean age ± SD: 61±15, 80% female, 62% white). Of those, 26% (n=240) were hospitalized on or within 30 days after COVID-19 diagnosis. The proportion of patients hospitalized was highest in non-TNFi bDMARD users (37/87; 43%), followed by csDMARDs users (161/581; 28%) and lowest in JAKi (13/68; 19%) and TNFi users (29/174; 17%). In multivariable-adjusted models, no differences in risk of hospitalization were found comparing JAKi users to csDMARD users (aOR=0.71; 95% CI 0.37-1.36) or TNFi users to csDMARD users (aOR=0.67; 95%CI 0.43-1.06). Compared to non-TNFi bDMARD users, JAKi use and TNFi use was associated with reduced risk of hospitalization (JAKi aOR=0.32; 95%CI 0.14-0.71; TNFi aOR=0.34; 95%CI 0.18-0.62). Age and corticosteroid use were positively associated with 30-day hospitalization in all models. Results of sensitivity analyses were consistent with the main findings.

Conclusion: In this study, roughly a quarter of RA patients with recent DMARD treatment were hospitalized within 30 days after COVID diagnosis. Patients treated with JAKi and TNFi therapies experienced the lowest risk of hospitalization, with risk of hospitalization significantly lower than non-TNFi bDMARDs. However, recent therapy recorded in the EHR may not reflect exposure at time of COVID-19 diagnosis and small sample size per treatment may limit interpretation.

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