Table 1.

	TNF inhibition (269)		Other immunomodulation (874)	
	Total patients	Rate (%)	Total patients	Rate (%)
Disease activity				
stable	141	53	408	47
low	93	35	299	34
Moderate	15	6	108	12
High	10	4	29	3
Comorbidities				
cardiovascular diseases	18	7	104	12
arterial hypertension	77	29	303	35
bronchial asthma	12	4	65	7
COPD/interstitial lung disease	11	4	86	10
chronic renal failure	9	3	77	9
Osteoporosis	13	5	67	8
Diabetes	22	8	92	11
COVID-19 related symptoms				
Fever	142	53	478	55
dry cough	152	57	530	61
Expectoration	31	12	83	9
muscular pain	97	36	280	32
Fatigue	135	50	424	49
Headache	101	38	237	27
shortness of breath	49	18	245	28
no symptoms	23	9	56	6
COVID-19 outcome				
Outpatients	237	88	619	71
Inpatients	32	12	255	29
need of oxygen treatment	18	7	189	22
invasive ventilation	5	2	49	6
fatal course	0	0	49	6
TNF inhibitors				
Adalimumab	95	35		
Infliximab	23	9		
Certolizumab	33	12		
Golimumab	24	9		
Etanercept	94	35		
GC and disease activity in TNF-I treated patients				
TNF-I inpatients treated with GC	18/32	56	p< 0.001	
TNF-I outpatients treated with GC	42/237	18		
TNF-I inpatients with high disease activity	4/32	13		
TNF-I outpatients with high disease activity	6/237	6	p= 0.005	

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OP0284

OUTCOME OF COVID-19 IN PATIENTS WITH RHEUMATIC AND INFLAMMATORY DISEASES TREATED WITH RITUXIMAB: DATA FROM DE FRENCH RMD COVID-19 COHORT

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Background: Various observations have suggested that the course of the COVID-19 infection may be less favorable in patients with inflammatory rheumatic and musculoskeletal diseases (iRMD) receiving rituximab (RTX).

Objectives: To investigate whether treatment with RTX is associated with severe infection and death.

Methods: We performed an observational, multicenter, French national cohort study querying the French RMD COVID-19 cohort, including highly suspected/confirmed iRMD-COVID-19 patients. The primary endpoint was to assess the severity rate of COVID-19. Severe disease was defined by hospitalization in intensive care unit or death. The secondary objectives were to analyze death rate and length of hospital stay. Two control groups were considered for comparison with RTX treated patients: a first group including all non-RTX treated iRMD patients and a second consisting on RTX untreated iRMD patients with diseases for which RTX is a recognized therapeutic option. Adjusting on potential confounding factors was performed by using inverse probability of treatment weighting (IPTW) propensity score method.

Results: We collected a total of 1090 records. Patients were mainly females (67.3%, 734/1090) with a mean age of 55.2±16.4 years, and 51.1% (557/1090) were over the age of 55. Almost 70% of the population had at least one comorbidity (756/1090). A total of 63 patients were treated with RTX, mainly for rheumatoid arthritis (RA) (31/63, 49.2%). RTX treated patients were more likely to be males, with older age, higher prevalence of comorbidities and corticosteroid use. The control population consisted on 1027 non-RTX treated iRMD patients, and 495 RTX untreated iRMD patients with diseases for which RTX is a recognized therapeutic option.

Of the 1,090 patients, 137 developed severe disease (12.6%). After adjusting on potential confounding factors (age, sex, arterial hypertension, diabetes, smoking status, body mass index, interstitial lung disease, cardiovascular diseases, cancer, corticosteroid use, chronic renal failure and the underlying disease), severe disease was confirmed to be observed more frequently in patients receiving RTX compared to all RTX untreated iRMD patients (effect size, ES 3.26, 95% confidence interval, CI 1.66 to 6.40, p<0.001) and the subgroup of untreated RTX patients with diseases eligible for RTX therapy (ES 2.62, 95% CI 1.34 to 5.09, p=0.005). Patients who developed a severe disease had a more recent rituximab infusion compared to patients with mild or moderate disease. Indeed, the time between the last infusion of rituximab and the first symptoms of COVID-19 was significantly shorter in patients who developed a severe form of COVID-19 (Figure 1).

Figure 1. Distribution (Tukey's box plot) of Lag time between last infusion of Rituximab according to disease severity. P-Values for comparison between disease severity with Kruskal Wallis test are reported; P-Value<0.001 for either post-hoc comparison of severe disease group with moderate or mild disease group (calculated using Dunn's test).

Eighty-nine patients in our cohort died, resulting in an overall death rate of 8.2%. Death rate was numerically higher in RTX treated patients (13/63, 20.6%) compared to all RTX untreated iRMDs patients (76/1027, 7.4%) and the subgroup of untreated RTX patients with diseases eligible for RTX therapy (49/495, 9.9%). After considering the previously described confounding factors, the risk of death was not significantly increased in patients treated with RTX compared to all RTX untreated iRMDs patients (ES 1.32, 95% CI 0.55 to 3.19, p=0.53) (Table 2) and the subgroup of untreated RTX patients with diseases eligible for RTX therapy (ES 1.48, 95% CI 0.68 to 3.20, p=0.32). In line with a more severe COVID-19 disease, the length of hospital stay was markedly longer in patients treated with RTX compared to both untreated RTX patient groups.

Conclusion: RTX therapy is associated with a more severe COVID-19 infection. RTX will have to be applied with particular caution in patients with iRMDs.

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OP0285

COVID-19 HOSPITALIZATIONS, ICU ADMISSION, AND DEATH AMONG PATIENTS WITH IMMUNE MEDIATED INFLAMMATORY DISEASES (IMID) – A POPULATION-BASED STUDY

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Background: It remains unclear whether patients with IMID are at greater risk for severe COVID-19.

Objectives: To investigate the risk of COVID-19 hospitalizations and their outcomes in patients with IMID compared with matched non-IMID patients from the general population.

Methods: A population-based, matched cohort study was conducted in adults living in Ontario, Canada using health administrative data. Ten cohorts of the following IMID were assembled: rheumatoid arthritis, psoriasis, psoriatic arthritis, ankylosing spondylitis, systemic autoimmune rheumatic diseases (SARDs), including systemic lupus, systemic sclerosis, Sjogren's, myositis), multiple sclerosis (MS), iritis, inflammatory bowel disease, polymyalgia rheumatica (PMR), and vasculitis (including giant cell arteritis and other types of vasculitides). Each patient was matched with 5 non-IMID comparators based on age, sex, area of residence and living in long-term care (LTC). Patients who were admitted to hospital from January 1st to July 31st, 2020 and had ICD-10 COVID-19 diagnosis codes (U07.2 or U07.1) were identified. Among those with COVID-19 hospitalizations, we determined those with admissions to intensive care unit or required mechanical ventilation or died in hospital ('complicated hospitalization'). Age-sex-standardized rates were compared between IMID and non-IMID patients and risk factors for hospitalizations were identified by multivariable logistic regression analysis.

Results: In total, 493,499 IMID (417 hospitalized) and 2,466,946 non-IMID patients (1,519 hospitalized) were assessed. The age-sex-standardized rate of COVID-19 hospitalization was higher in IMID (6.4 per 10,000, 95% confidence interval (CI) 5.8, 7.2) versus non-IMID patients (4.8 per 100,000, 95% CI 4.5, 5). The highest rates of hospitalizations were found in vasculitis (18/10,000), MS (16.7/10,000) and PMR (10.1/10,000). IMID diagnosis was associated with 37% higher risk of being hospitalized for COVID-19 (Odds Ratio (OR) 1.37, 95% CI 1.23, 1.53) (Figure 1). This risk was slightly attenuated after adjusting for socio-demographic factors and comorbidities but remained elevated by 23% compared to non-IMID (OR 1.23, 95% CI 1.10, 1.37). The risk for hospitalizations was increased in RA, vasculitis, SARDs, PsA, MS and iritis (Figure 1). Risk factors for COVID-19 hospitalizations included older age, male sex, lower income, multi-morbidity and living in long-term care (Table 1). The risk for complicated COVID-19 hospitalizations was higher by 21% in IMID patients (OR 1.21, 95% CI 1.02, 1.43), however, this association was attenuated after adjustment for demographics and comorbidities (OR 1.08).

Table 1. Risk Factors for COVID-19 Hospitalizations in IMIDs vs. non-IMIDs

Variable	OR	95% CI
IMIDs vs. Non-IMID	1.23	1.10, 1.37
Age (10 yrs)	1.49	1.44, 1.54
Sex: Female	0.68	0.62, 0.75
Long term care resident	8.28	7.32, 9.37
ADG: 5-9 vs. 0-4	1.45	1.22, 1.71
10-14 vs. 0-4	2.26	1.92, 2.67
15+ vs. 0-4	3.23	2.73, 3.82
Income (quintile)		
Quintile 2 vs. 1	0.82	0.73, 0.93
Quintile 3 vs. 1	0.76	0.67, 0.86
Quintile 4 vs. 1	0.56	0.48, 0.64
Quintile 5 vs. 1	0.46	0.40, 0.54
Urban vs. rural	4.33	3.32, 5.67

ADG - Aggregated Diagnosis Groups

Conclusion: Patients with IMID were at higher risk of being hospitalized with COVID-19 and for having complicated hospitalizations. Hospitalization risk was partially independent of their comorbid conditions.

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OP0286

CHARACTERISTICS ASSOCIATED WITH SEVERE COVID-19 OUTCOMES IN SYSTEMIC LUPUS ERYTHEMATOSUS (SLE): RESULTS FROM THE COVID-19 GLOBAL RHEUMATOLOGY ALLIANCE (COVID-19 GRA)

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