The Journal of Rheumatology 2022;49:1
doi:10.3899/jrheum.210534
First Release November 1 2021

The Journal of Rheumatology

Research Letter

Improving COVID-19 Vaccine Coverage in Patients With Autoimmune and Inflammatory Diseases

To the Editor:

In December 2020, France began vaccinations using the messenger RNA (mRNA) vaccine for coronavirus disease 2019 (COVID-19) to combat the SARS-CoV-2 pandemic. Based on the risk for severe COVID-19, patients with autoimmune diseases (AIDs) who are receiving, or about to receive, steroids or immunosuppressive drugs have been prioritized for vaccination.[1] However, vaccination rates remain worryingly low in this population.[2] Our main objective was to determine whether a vaccine task force including healthcare professionals who are directly involved in the management and care of patients with AID would improve COVID-19 vaccine coverage in this population.

Our study was conducted in the Internal Medicine Department of Hôpital Bichat, a national center for rare AIDs (Paris, France). The vaccine task force involved in setting up a 4-week vaccination program included 1 medical secretary, 1 nurse, and 2 physicians. All adult outpatients with AID who had at least 1 visit in our department between December 2020 and March 2021 were screened. Patients were called to schedule vaccination using the SARS-CoV-2 mRNA vaccine BNT162b2 (Pfizer); those who had already been vaccinated were excluded. All patients were given a questionnaire addressing sociodemographic characteristics, experience, and knowledge about COVID-19, history of vaccination against seasonal influenza, and reasons for agreeing/refusing/eventually agreeing to be vaccinated. Data regarding AID, treatment, and comorbidities were extracted from electronic medical records using a standardized data collection form. Vaccination was scheduled 2 days per week for 4 weeks. The requirement of signed informed consent was waived according to French legislation. All procedures were in accordance with local and national ethical standards.

Three hundred eighty-five patients with AID (median 51 [range 19–93] yrs, 67.3% female) were screened. Among them, 339 (88%) were contacted to schedule vaccination. Patients with systemic lupus erythematosus, vasculitis, and sarcoidosis accounted for almost two-thirds of those contacted. Two hundred fifteen (63.4%) patients were receiving steroids and/or immunosuppressive drugs at study time. Besides AID, patients had a median of 1 [range 0–4] comorbidities identified as risk factors of severe COVID-19. Table 1 summarizes the patient characteristics.

Forty-nine patients with AID were already vaccinated, defining a preintervention vaccination rate of 14.5% (49/339). Among patients who were not vaccinated (n = 290), 54 (15.9%) explicitly refused the vaccine, 42 (12.4%) did not respond, and 13 (3.8%) were reluctant (Supplementary Figure 1, available from the authors on request). Patients who refused vaccination against SARS-CoV-2 did not differ from patients who accepted, except for a higher proportion of patients receiving steroids or immunosuppressive drugs (43 of 54 [79.6%] vs 132 of 219 [60.3%], $P = 0.007$). The main reasons for declining vaccination (n = 40) were the fear of long-term side effects (55%) and the distrust in Big Pharma (20%; Supplementary Table 1). Of note, 13 (32.5%) declared that they would never accept vaccination no matter the circumstances.

Eventually, 170 of 290 patients agreed to be vaccinated against SARS-CoV-2, which amounts to an acceptance rate of 58.6%. The main reported reasons for accepting vaccination were to protect themselves (129 of 155 [83.2%]) and/or their relatives (117 of 155 [75.5%]), and because they were convinced that they were at risk of severe COVID-19 (97 of 155 [62.6%]; Supplementary Table 1, available from the authors on request). Vaccine coverage appeared higher in senior executives, retired patients, and patients who are vaccinated yearly against influenza (Supplementary Table 2). By the end of the 4-week vaccine program, the postintervention COVID-19 vaccination rate reached 64.6% ($P < 0.00001$ as compared to the preintervention rate; Supplementary Figure 1).

Despite a vaccination program based on national recommendations, the vaccine acceptance rate remains moderate in patients with AID. Of note, vaccine acceptance was lower in patients with immunocompromised status, confirming that a proportion of patients with AID does not perceive themselves at risk of severe COVID-19.[3] Importantly, the main reasons reported by patients to refuse vaccination were the fear of long-term severe adverse events, as well as a general distrust in Big Pharma and health authorities (11 of 40 [27.5%] patients; Supplementary Table 1, available from the authors on request). Accordingly, a high proportion of patients (13 of 40 patients [32.5%]) who refused the vaccination declared that "no reason can make [them] accept" to be vaccinated. These data highlight the importance of patient education and information about the benefits of vaccination in the context of the COVID-19 pandemic.

Our study had several limitations. First, the sample size was low. Second, the study design was monocentric. Third, no control group (i.e., group without intervention) was included during the study period. Fourth, the very low prevaccination rate may reflect the hesitancy of patients at the very beginning of the vaccination program. Fifth, the vaccination acceptance may have increased month by month due to improved campaigns about safety and benefits.

However, we believe that a similar approach may be easily implemented at other institutions as an effective way to improve COVID-19 vaccination rates in AID. These data underscore the crucial role of rheumatologists and internists in vaccination uptake.

Tiphaine Goulenok[1], MD
Chrystelle Francois[1], RN

Table 1. Patient characteristics.

	Screened, n = 385	Contacted, n = 339	Vaccinated, n = 219	Refused Vaccine, n = 54	*P*[*]	Acceptance Rate[a], %
Age, yrs, median (range)	51 (19–93)	52 (19–92)	51 (19–92)	51 (19–85)	0.16	
Female sex, n (%)	259 (67.3)	224 (66.1)	140 (63.9)	38 (70.4)	0.43	
AID, n (%)						
SLE	101 (26.2)	96 (28.3)	60 (27.4)	19 (35.2)	0.31	75.9
Large-vessel vasculitis[b]	46 (11.9)	36 (10.6)	25 (11.4)	6 (11.1)	> 0.99	80.6
Sarcoidosis	44 (11.4)	43 (12.7)	27 (12.3)	5 (9.2)	0.64	84.4
Small-vessel vasculitis[c]	38 (9.9)	35 (10.3)	23 (10.5)	5 (9.2)	> 0.99	82.1
Behçet disease	25 (6.5)	23 (6.8)	15 (6.8)	6 (11.1)	0.27	71.4
Inflammatory myositis	21 (5.4)	19 (5.6)	9 (4.1)	6 (11.1)	0.09	60.0
Autoimmune cytopenia	21 (5.4)	15 (4.4)	13 (5.9)	0 (0)	0.08	100
APS	20 (5.2)	17 (5.0)	12 (5.5)	1 (1.8)	0.48	92.3
Sjögren syndrome	16 (4.2)	12 (3.5)	10 (4.6)	0 (0)	0.22	100
Autoinflammatory disease	15 (3.9)	9 (2.7)	4 (1.8)	0 (0)	> 0.99	100
IgG4-related diseases	14 (3.6)	13 (38.3)	8 (3.7)	2 (3.7)	> 0.99	80.0
Systemic sclerosis	9 (2.4)	7 (2.1)	6 (2.7)	0 (0)	0.60	–
MCTD	6 (1.6)	6 (1.8)	5 (2.3)	1 (1.8)	> 0.99	–
Autoimmune encephalitis	5 (1.3)	5 (1.5)	2 (0.9)	1 (1.8)	0.49	–
Relapsing polychondritis	2 (0.5)	1 (0.3)	0 (0)	1 (1.8)	0.20	–
Unclassified	2 (0.5)	2 (0.6)	0 (0)	1 (1.8)	0.20	–
Comorbidities, n (%)						
No. of comorbidities, median (range)	1 (0–6)	1 (0–4)	1 (0–4)	1 (0–4)	0.42	
≥ 2 comorbidities	101 (26.2)	87 (25.7)	52 (23.7)	17 (31.5)	0.29	75.4
High blood pressure	122 (31.7)	105 (31.0)	64 (29.2)	18 (33.3)	0.62	75.4
BMI > 30	73 (19.0)	64 (18.9)	38 (17.4)	12 (22.2)	0.43	76.0
Diabetes	46 (11.9)	42 (12.4)	23 (10.5)	9 (16.7)	0.24	71.9
COPD/pulmonary fibrosis	33 (8.6)	32 (9.4)	24 (11.0)	7 (13)	0.64	77.4
Stroke	32 (8.3)	28 (8.3)	23 (10.5)	3 (5.5)	0.44	88.5
CKD[d]	29 (7.5)	26 (7.7)	17 (7.8)	5 (9.2)	0.78	77.3
Cardiac failure	23 (6.0)	17 (5.0)	10 (4.6)	3 (5.5)	0.73	76.9
Active cancer	9 (2.4)	8 (2.4)	7 (3.2)	0 (0)	0.35	100
Treatment at time of vaccination						
IS drugs[e] or steroids	242 (62.9)	215 (64.3)	132 (60.6)	43 (79.6)	0.007	75.4

[*] Comparisons between vaccinated vs refused vaccine groups were performed using the Fisher exact test (dichotomous variables) or the Mann-Whitney *U* test (continuous variables). A *P* value < 0.05 was considered as statistically significant and all tests were 2-sided. [a] Acceptance rate = vaccinated / (vaccinated + refused vaccine). [b] Large-vessel vasculitis included giant cell arteritis, and Takayasu disease. [c] Small-vessel vasculitis included antineutrophil cytoplasmic antibody–associated vasculitis, cryoglobulinemia, and Susac syndrome. [d] CKD is defined by an eGFR < 60 mL/min/1.73 m^2. [e] IS drugs included methotrexate, azathioprine, mycophenolate mofetil, rituximab, tocilizumab, and infliximab. AID: autoimmune disease; APS: antiphospholipid syndrome; CKD: chronic kidney disease; COPD: chronic obstructive pulmonary disease; eGFR: estimated glomerular filtration rate; IS: immunosuppressive; MCTD: mixed connective tissue disease; SLE: systemic lupus erythematosus.

Céline Mendes[1], RN
Fatima Farhi[1], Clinical Research Associate
Jean-Francois Alexandra[1], MD
Diane Rouzaud[1], MD
Thomas Papo[1,2], Professor of Medicine, MD
Karim Sacre[1,2], Professor of Medicine, MD, PhD
[1]Département de Médecine Interne, Hôpital Bichat, Université de Paris, AP-HP;
[2]INSERM U1149, Paris, France.

The authors declare no conflicts of interest relevant to this article.

Address correspondence to Prof. K. Sacre, Department of Internal Medicine, Bichat Hospital, AP-HP, 46 rue Henri Huchard, 75018, Paris, France. Email: karim.sacre@aphp.fr.

ACKNOWLEDGMENT

The authors wish to acknowledge Marie Berleur, Marie-Paule Chauveheid, Julie Chezel, Nicole Delory, Thecia Dissaux, Antoine Dossier, and Maureen Marie-Joseph from the Bichat Hospital Internal Medicine Department for their invaluable help.

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