

Dati emergenti dai registri nazionali e internazionali su COVID 19 e malattie reumatiche

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SCUOLA DI SPECIALIZZAZIONE DI REUMATOLOGIA

DIPARTIMENTO DI SCIENZE MEDICHE

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Outline

Epidemiology

Clinical questions

National and international registries

CONTROL-19

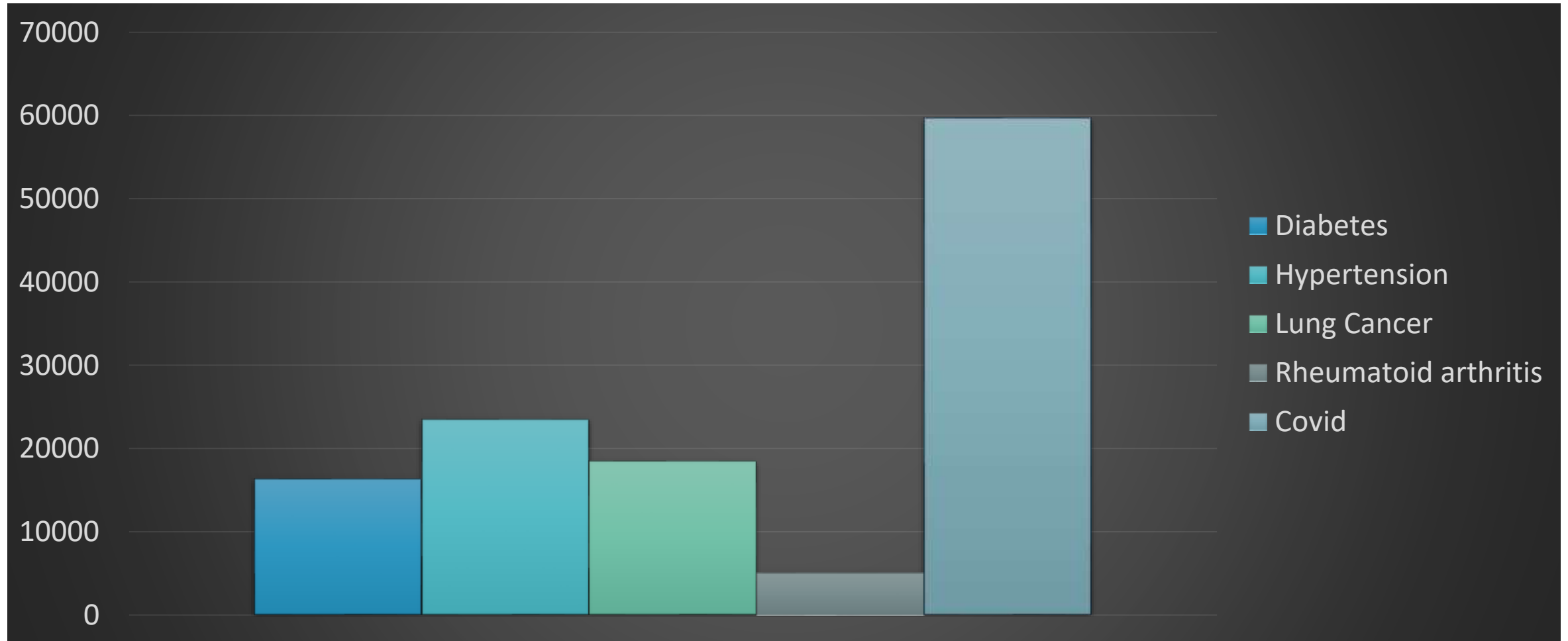
EULAR

GRA

Open questions

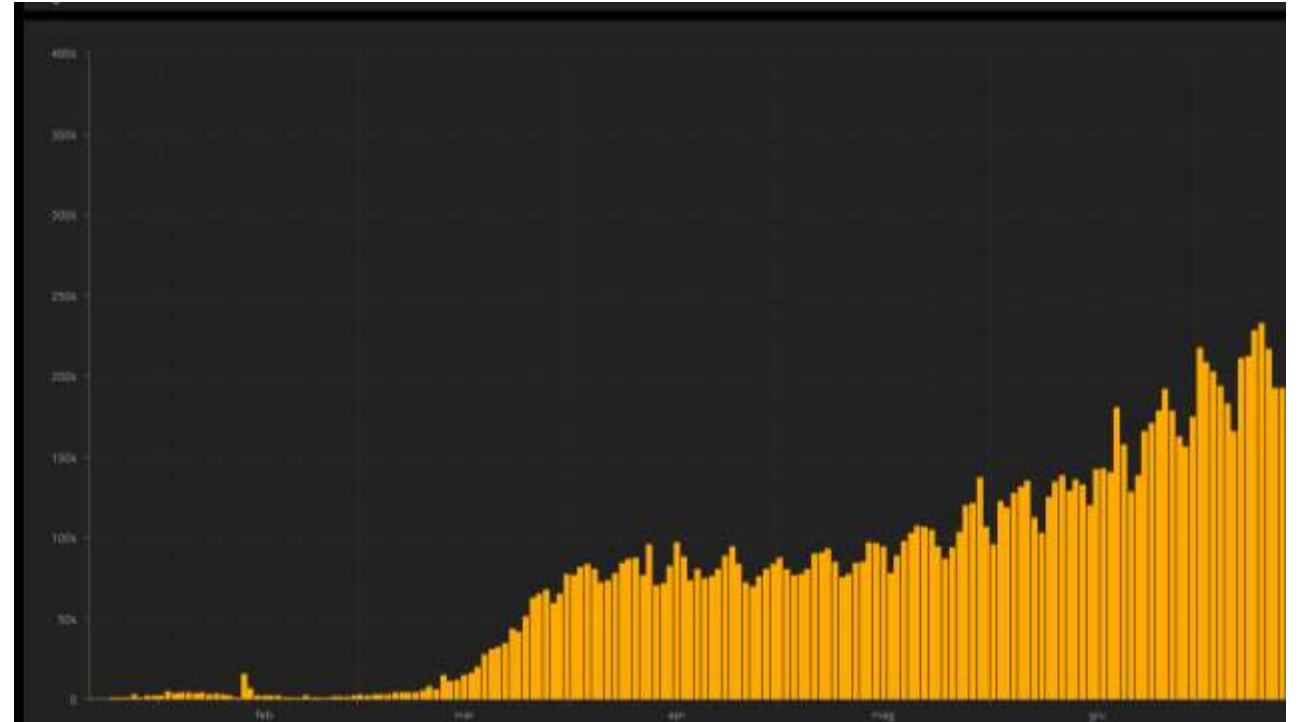
Concluding remarks

Pubmed publications 2020



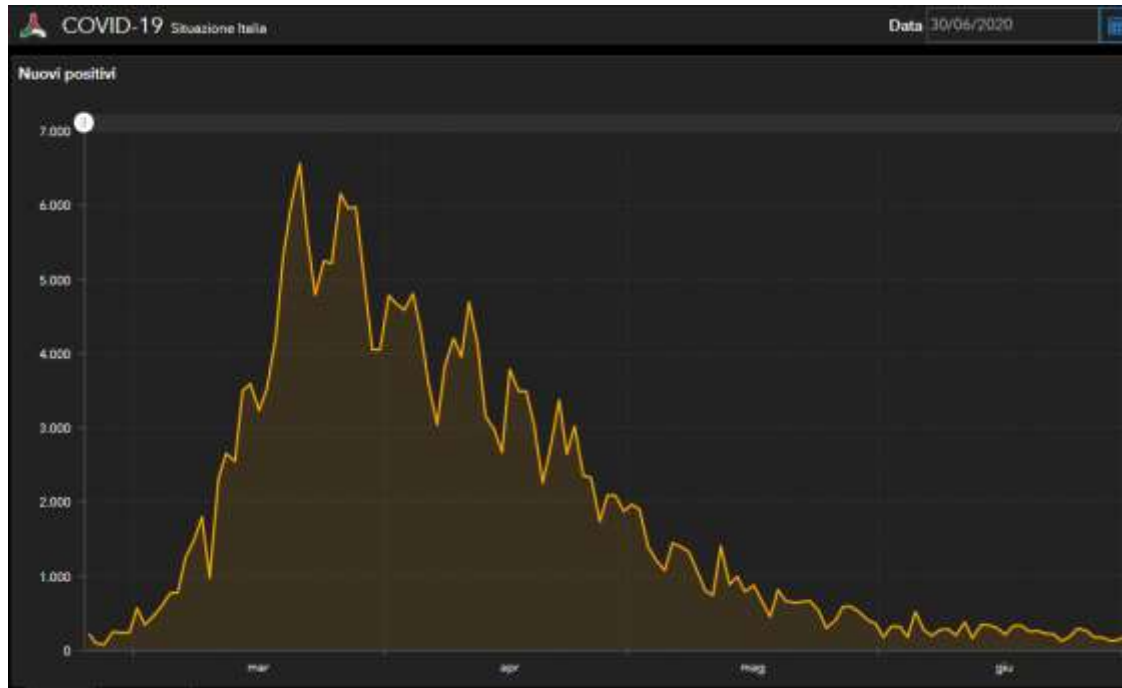
16th of October

Global Epidemiology



<https://coronavirus.jhu.edu/map.html>

Epidemiology - Italy



<http://opendatadpc.maps.arcgis.com/apps/opsdashboard/index.html#/b0c68bce2cce478eaac82fe38d4138b1>

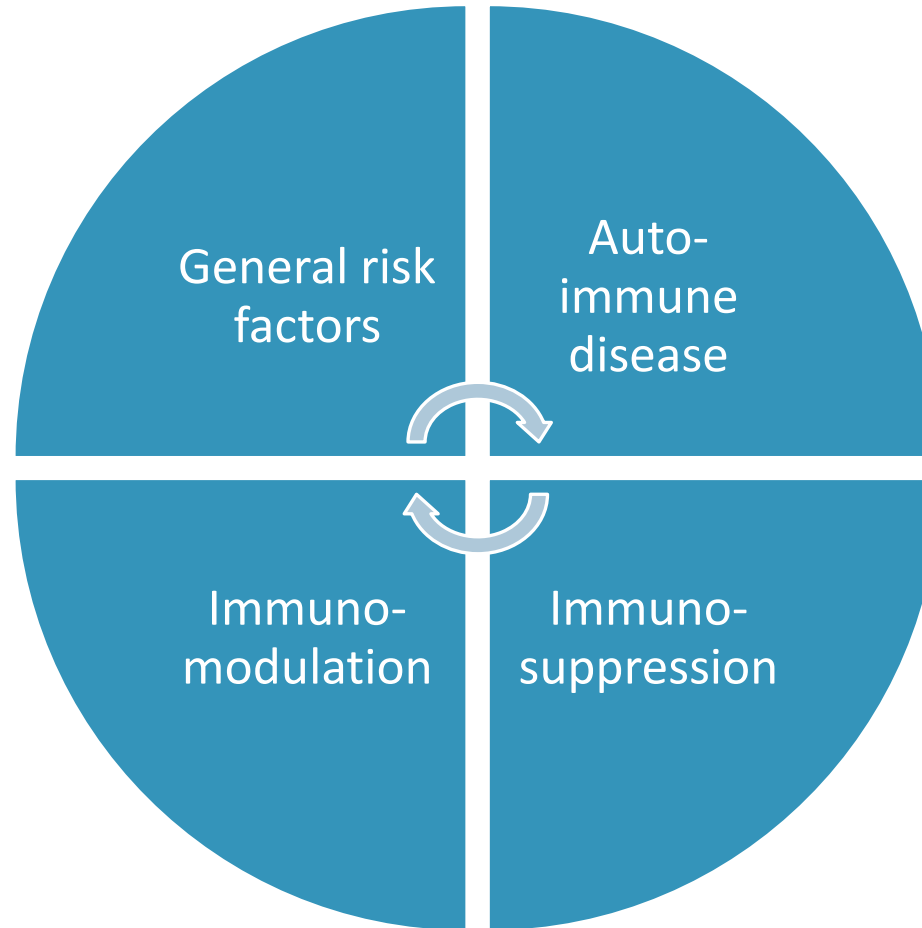
Main risk factors in the general population

Severe disease defined as infection resulting in **hospitalization**, **admission to the intensive care unit [ICU]**, **intubation or mechanical ventilation**, or **death**

- Age
- Male gender
- Race/ethnicity
 - Black, Hispanic, and South Asian individuals
- Lifestyles
 - Smoking
- Comorbidities
 - Cardiovascular disease
 - Diabetes mellitus
 - Hypertension
 - Chronic lung disease
 - Cancer (in particular hematologic malignancies, lung cancer, and metastatic disease)
 - Chronic kidney disease
 - Obesity
- Viral load

RMD population

Susceptibility



Outcome

Clinical questions

Which is the incidence of COVID-19 in RMD?

Which is the outcome of COVID-19 in RMD ?

Which are the determinants of clinical outcome of COVID-19 in RMDs ?

- Demographics
- Healthcare organizations / country
- Comorbid conditions
- Disease activity
- Treatments
 - NSAIDs
 - Glucocorticoids
 - csDMARDs
 - bDMARDs
 - Ts DMARDs

How COVID-19 impacts on RMDs?

Registry framework



<https://redcap.reumatologia.it/surveys/?s=YLDERDE88W>

<https://www.redcap.rss.mhs.man.ac.uk/surveys/?s=NEXNJFWX38>

<https://redcap.ucsf.edu/surveys/?s=W7CMFDXPJD>



Similar initiatives

- [SECURE-IBD: Coronavirus and Inflammatory Bowel Disease \(IBD\) Reporting Registry](#)
- [SECURE-SCD: Coronavirus and Sickle Cell Disease Registry](#)
- [COVID19 in Primary Immunodeficiency \(PID\): Survey for clinicians from the ESID \(European Society for Immunodeficiencies\)](#)
- [COVID-Hep.net: Coronavirus \(COVID-19\) in liver disease reporting registry](#)
- [SECURE – Cirrhosis](#)
- [PsoProtect: Psoriasis Patient Registry for Outcomes, Therapy and Epidemiology of Covid-19 Infection](#)
- [USA Pediatric COVID-19 Registry \(PIDTRAN\)](#)
- [T1D Exchange: Surveillance of COVID-19 in Patients with Type 1 Diabetes](#)
- [SECURE-AD: Coronavirus & Atopic Dermatitis Reporting Database](#)
- [COVID-19 Dermatology Registry](#)
- [CURE HIV-COVID Reporting Database](#)
- [Spondylitis Association of America – COVID-19 and Spondyloarthritis Survey](#)
- [American Academy of Dermatology – COVID-19 Dermatology Registry](#)
- [Society of Critical Care Medicine \(SCCM\) – Viral Infection and Respiratory Illness Universal Study \(VIRUS\)](#)
- [intubateCOVID – tracking outcomes of anesthesia providers caring for COVID19 patients](#)
- [ECMO in COVID19 Global Registry](#)
- [ASH RC COVID-19 Registry for Hematologic Malignancy](#)
- [The COVID-19 and Cancer Consortium](#)
- [Transthoracic Echocardiography in COVID 19 Registry](#)
- [PRIORITY: Pregnancy Coronavirus Outcomes Registry](#)
- [The Global Hidradenitis Suppurativa COVID-19 Registry](#)

General methodology



Inclusion Criteria

- age >18 years
- Diagnosis of RMD
- Positive swab test for SARS-CoV-2

Data protection

- Fully retrospective and anonymised on clinical records

Inclusion Criteria

- Adult and pediatric population
- Diagnosis of RMD
- Any type of diagnosis of COVID-19

Data protection

- Fully retrospective and anonymised on clinical records

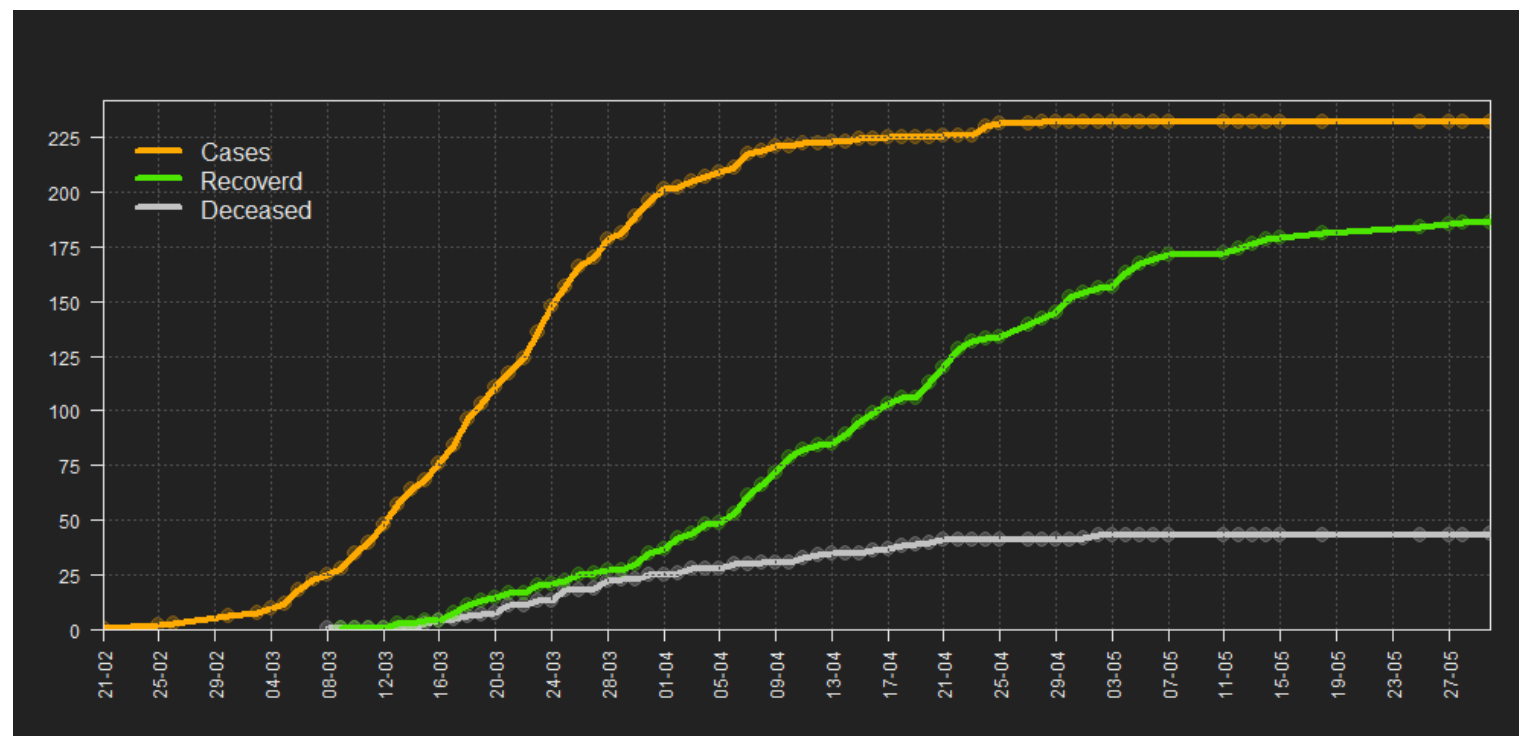
CONTROL-19 objectives

To describe the clinical course of COVID in RMD in Italy

To identify potential risk factors of poor outcome

To compare the outcome of RMDs to the general population

To share data at global level



Scirè CA, Carrara G, Zanetti A, Landolfi G, Chighizola C, Alunno A, Andreoli L, Caporali R, Gerli R, Sebastiani GD, Valesini G, Sinigaglia L; Italian Registry of the Italian Society for Rheumatology (CONTROL-19). COVID-19 in rheumatic diseases in Italy: first results from the Italian registry of the Italian Society for Rheumatology (CONTROL-19). Clin Exp Rheumatol. 2020 Jul-Aug;38(4):748-753.

	Male (N=83)	Female (N=149)	Total (N=232)	P-value
Age, mean (SD)	64.6 (13.4)	60.9 (14)	62.2 (13.9)	0.037
Age >65, n(%)	45 (55.6%)	67 (45.3%)	112 (48.9%)	
Smokers, n (%)	11 (14.3%)	11 (8%)	22 (10.3%)	0.008
Comorbidities, median (IQR)	2 (1 - 4)	2 (1 - 3)	2 (1 - 3)	0.042
Major comorbidities, n (%)				
Lung (COPD)	7 (8.6%)	14 (9.5%)	21 (9.2%)	1
Lung (interstitial)	7 (8.6%)	20 (13.7%)	27 (11.9%)	0.292
Lung (other)	7 (9.2%)	14 (10.3%)	21 (9.9%)	1
Hypertension	42 (51.9%)	61 (41.2%)	103 (45%)	0.129
Obesity (BMI>30)	12 (15.4%)	19 (13.3%)	31 (14%)	0.688
Cardiovascular	28 (35%)	22 (15.1%)	50 (22.1%)	0.001
Diabetes	13 (16%)	15 (10.1%)	28 (12.2%)	0.21
RMD, n (%)				
Rheumatoid arthritis	26 (31.3%)	53 (35.6%)	79 (34.1%)	0.61
Spondyloarthritis	34 (41%)	27 (18.1%)	61 (26.3%)	<0.001
Connective tissue disease	6 (7.2%)	43 (28.9%)	49 (21.1%)	<0.001
Vasculitis	8 (9.6%)	18 (12.1%)	26 (11.2%)	0.728
Other	9 (10.8%)	8 (5.4%)	17 (7.3%)	0.204
Disease activity, n (%)				
Remission	29 (34.9%)	42 (28.2%)	71 (30.6%)	
RMD treatment, n (%)				
Hydroxychloroquine	9 (10.8%)	34 (22.8%)	43 (18.5%)	0.038
Glucocorticoids	42 (50.6%)	78 (52.3%)	120 (51.7%)	0.906
cDMARDs	43 (51.8%)	54 (36.2%)	97 (41.8%)	0.03
Immunosuppressants	6 (7.2%)	19 (12.8%)	25 (10.8%)	0.28
bDMARDs				
TNF-i	26 (31.3%)	29 (19.5%)	55 (23.7%)	0.061
Tocilizumab	0 (0%)	3 (2%)	3 (1.3%)	0.555
Sarilumab	0 (0%)	2 (1.3%)	2 (0.9%)	0.538
Abatacept	1 (1.2%)	4 (2.7%)	5 (2.2%)	0.657
Rituximab	2 (2.4%)	4 (2.7%)	6 (2.6%)	1
ts-DMARDs				
Baricitinib	0 (0%)	4 (2.7%)	4 (1.7%)	0.3
Tofacitinib	0 (0%)	4 (2.7%)	4 (1.7%)	0.3

COVID characteristics in RMD

	Male (N=83)	Female (N=149)	Total (N=232)	P-value
Clinical features				
Fever	75 (90.4%)	124 (84.4%)	199 (86.5%)	0.232
Asthenia/Fatigue	61 (77.2%)	110 (76.9%)	171 (77%)	1
Cough	55 (67.9%)	81 (56.2%)	136 (60.4%)	0.091
Dyspnoea	50 (60.2%)	79 (55.2%)	129 (57.1%)	0.489
Myalgia	26 (33.8%)	66 (46.8%)	92 (42.2%)	0.085
Tachypnoea	29 (38.2%)	42 (30.4%)	71 (33.2%)	0.289
Joint pain	15 (19.5%)	47 (32.9%)	62 (28.2%)	0.041
Dysgeusia	14 (23%)	36 (31.9%)	50 (28.7%)	0.292
Anosmia	10 (16.4%)	33 (28.9%)	43 (24.6%)	0.096
Diarrhoea	11 (13.9%)	40 (28.8%)	51 (23.4%)	0.013
Headache	14 (18.9%)	35 (25.5%)	49 (23.2%)	0.309
Complications				
Pneumonia	57 (73.1%)	84 (59.2%)	141 (64.1%)	0.041
Serious acute respiratory failure	16 (20.8%)	36 (24.8%)	52 (23.4%)	0.618
Secondary infection	13 (17.6%)	18 (13.7%)	31 (15.1%)	0.543
ARDS	10 (12.8%)	16 (11.3%)	26 (11.9%)	0.828
Macrophage activation syndrome	6 (8%)	8 (6.2%)	14 (6.9%)	0.775
Sepsis	2 (2.7%)	11 (8.4%)	13 (6.3%)	0.14

COVID treatment and outcome in RMD

	Male (N=83)	Female (N=149)	Total (N=232)	P-value
<i>COVID treatment</i>				
Oxygen	55 (67.1%)	72 (49.3%)	127 (55.7%)	0.014
Antiviral	48 (60%)	55 (38.5%)	103 (46.2%)	0.003
Hydroxychloroquine	53 (66.2%)	80 (55.2%)	133 (59.1%)	0.14
Tocilizumab	6 (7.8%)	13 (9.4%)	19 (8.8%)	0.891
<i>Outcomes</i>				
Hospitalisation	67 (80.7%)	95 (63.8%)	162 (69.8%)	0.011
Non invasive ventilation	17 (21.5%)	30 (20.5%)	47 (20.9%)	1
Mechanical ventilation*	6 (7.6%)	11 (7.5%)	17 (7.5%)	1
Death*	20 (24.1%)	24 (16.1%)	44 (19%)	0.266
Combined outcome**	22 (26.8%)	27 (18.1%)	49 (21.2%)	0.167

Risk factors of severe outcome in RMD

	Unadjusted OR [95% IC]	Unadjusted p-value
Sex - Female	0.6[0.32-1.15]	0.123
Age - >65	4.9[2.42-10.65]	<0.001
Rheumatoid Arthritis	Ref	
Spondyloarthritis	0.6[0.24-1.42]	0.253
Connective tissue disease	0.76[0.3-1.83]	0.552
Vasculitis	1.25[0.43-3.36]	0.668
Other	1.85[0.57-5.6]	0.285
Hypertension or cardiovascular disease	2.46[1.27-4.95]	0.009
Lung disease	2.3[1.13-4.6]	0.019
Diabetes	1.96[0.79-4.56]	0.129
Remission	Ref	
Low/moderate/severe disease activity	1.44[0.72-3.07]	0.320
No DMARD	Ref	
b/ts DMARD only	0.29[0.09-0.87]	0.031
Cs DMARD only (no hydroxychloroquine)	0.54[0.22-1.37]	0.188
b/ts DMARD + Cs DMARD	0.59[0.19-1.74]	0.342
Hydroxychloroquine	1.16[0.5-2.48]	0.716
NSAIDs	0.57[0.19-1.46]	0.278
No PDN	Ref	
1-9 mg/day	3.05[1.5-6.45]	0.003
>10 mg/day	2.45[0.78-7.06]	0.107

Treatment for RMD and COVID-19 outcome

	Crude OR [95% CI]		Adjusted [§] OR [95% CI]	
No DMARD	reference		reference	
b/ts DMARD only	0.29[0.09-0.87]	0.031	0.50[0.13-1.81]	0.298
cs-DMARD only	0.54[0.22-1.37]	0.188	0.62[0.20-1.97]	0.419
b/ts DMARD + cs-DMARD	0.59[0.19-1.74]	0.342	0.97[0.22-4.22]	0.970
Hydroxychloroquine	1.16[0.50-2.48]	0.716		
NSAIDs	0.57[0.19-1.46]	0.278		
No prednisone	reference		reference	
prednisone 1-9 mg/day	3.05[1.50-6.45]	0.003	1.73[0.68-4.43]	0.244
prednisone >10 mg/day	2.45[0.78-7.06]	0.107	1.60[0.40-5.86]	0.488

Legend: OR: odds ratio; CI: confidence intervals; [§]adjusted for sex, age >65, comorbidities (hypertension or cardiovascular disease, lung disease, diabetes).

COVID-19 outcome in RMD vs general population

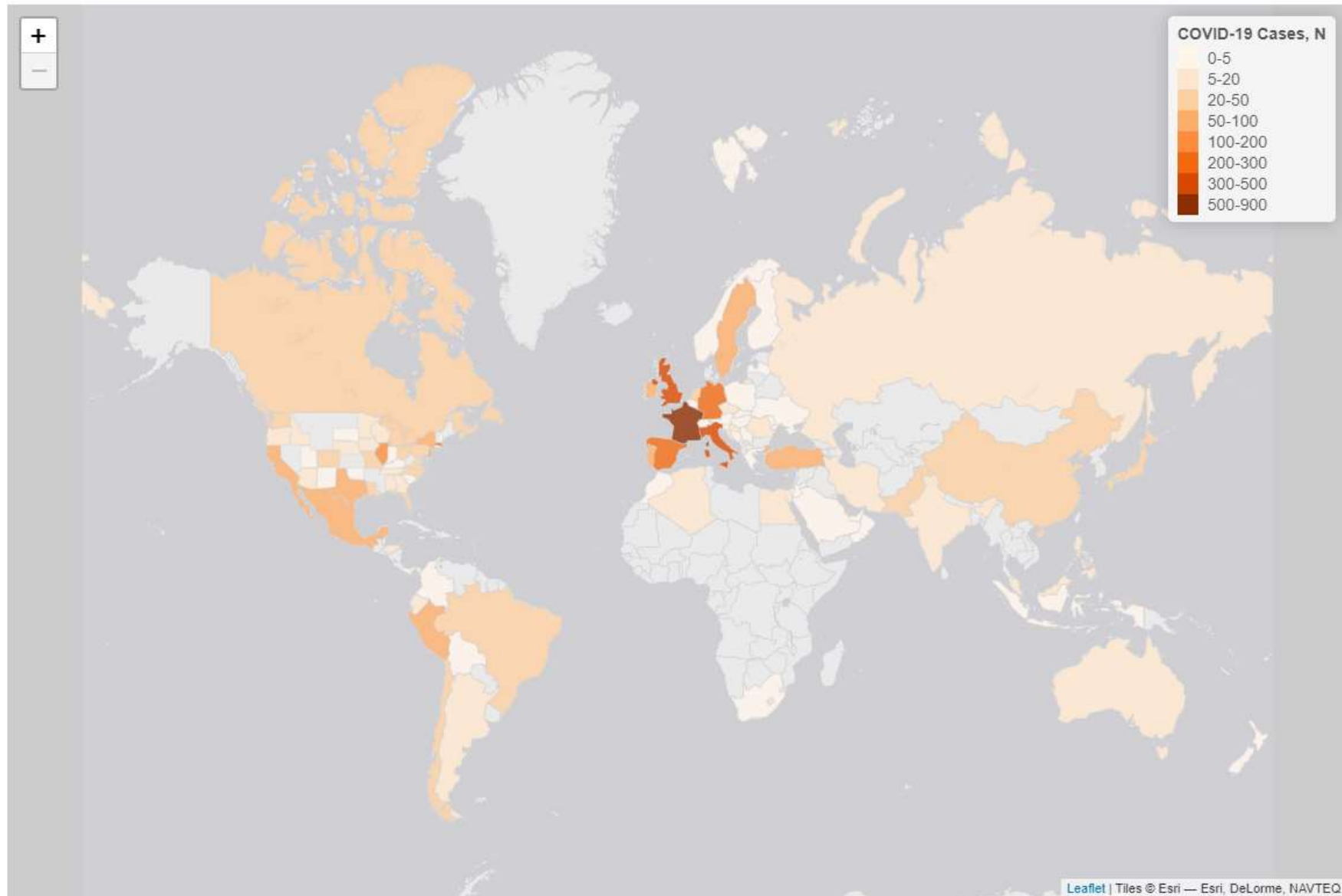
Variabile	RR [95%CI]	p-value
Female vs Male	0.42[0.41-0.42]	<0.001
Age 21-50 (ref over 80)	0.01[0.01-0.01]	<0.001
Age 51-60 (ref over 80)	0.05[0.05-0.05]	<0.001
Age 61-70 (ref over 80)	0.18[0.18-0.19]	<0.001
Age 71-80 (ref over 80)	0.57[0.56-0.59]	<0.001
RMD vs gen population	1.72[1.21-2.40]	0.002

GRA - objectives

To investigate factors associated with COVID-19-related hospitalisation and death in patients with rheumatic diseases and to analyse these associations by disease group.

Submitted

The COVID-19 Global Rheumatology Alliance Registry - July 31, 2020



GRA risk factor for hospitalisation

600 patients	N (%)
Region	
Region of the Americas: North	340 (57)
Region of the Americas: South	16 (3)
European region	218 (36)
African region	<5 (<1)
Eastern Mediterranean region	11 (2)
South-East Asian region	<5 (<1)
Western Pacific region	13 (2)
Female	423 (71)
Age (years)	
Median (IQR)	56 (45–67)
Most common rheumatic disease diagnoses*	
Rheumatoid arthritis	230 (38)
Systemic lupus erythematosus	85 (14)
Psoriatic arthritis	74 (12)
Axial spondyloarthritis or other spondyloarthritis	48 (8)
Vasculitis	44 (7)
Sjögren's syndrome	28 (5)
Other inflammatory arthritis	21 (4)
Inflammatory myopathy	20 (3)
Gout	19 (3)
Systemic sclerosis	16 (3)
Polymyalgia rheumatica	12 (2)
Sarcoidosis	10 (2)
Other	28 (5)

	N (%)
Most common comorbidities	
Hypertension	199 (33)
Lung disease†	127 (21)
Diabetes	69 (12)
Cardiovascular disease	63 (11)
Chronic renal insufficiency/end-stage renal disease	40 (7)
Disease activity (n=575)	
Remission	173 (30)
Smoking status (n=518)	
Ever	129 (25)
Never	389 (75)
Medication prior to COVID-19 diagnosis‡	
No DMARD	97 (16)
csDMARD only, including antimalarial therapy	272 (45)
csDMARD only, excluding antimalarial therapy	220 (37)
Antimalarial, with or without other DMARD	130 (22)
Antimalarial only	52 (9)
b/tsDMARDs only	107 (18)
csDMARD+b/tsDMARD combination therapy	124 (21)
NSAIDs (n=531)	111 (21)
Prednisone-equivalent glucocorticoids (n=592)	
None	403 (68)
1–9 mg/day	125 (21)
≥10 mg/day	64 (11)
Hospitalised	277 (46)
Deceased	55 (9)
Reported days from onset to resolution or death (n=275), median (IQR)	13 (8–17)

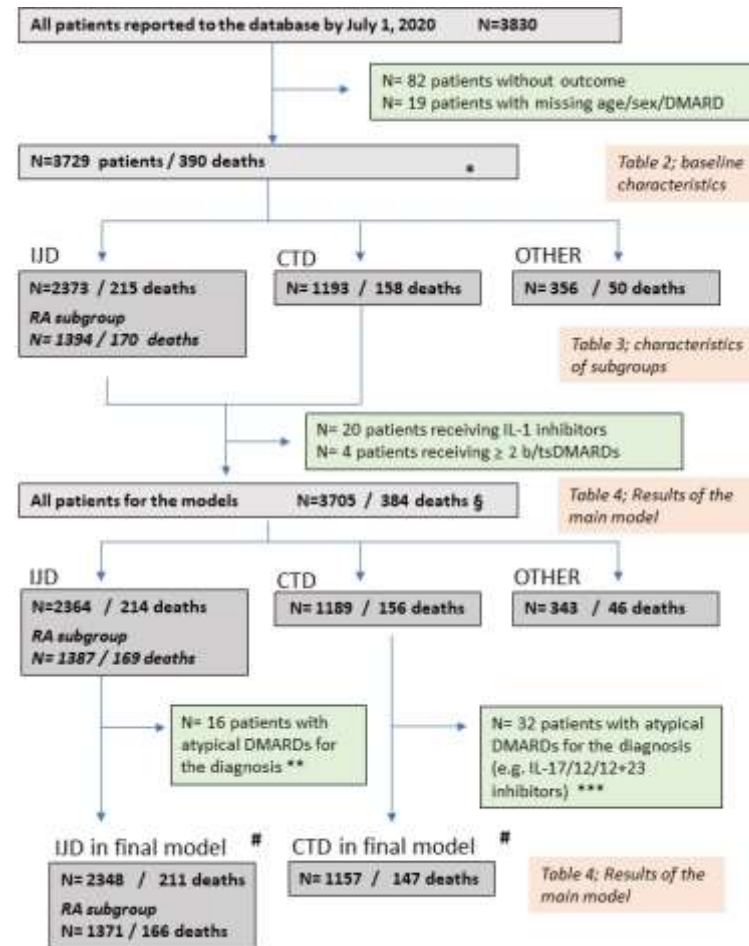
Gianfrancesco, Milena, et al. *Annals of the Rheumatic Diseases*. <https://doi.org/10.1136/annrheumdis-2020-217871>.

GRA: Risk factor of hospitalisation

	No. hospitalised/ No. cases (%)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	P value*
Female	185/423 (44)	0.72 (0.51 to 1.02)	0.83 (0.54 to 1.28)	0.39
Age >65 years	119/170 (70)	4.02 (2.74 to 5.89)	2.56 (1.62 to 4.04)	<0.01
Rheumatic disease diagnosis†				
Rheumatoid arthritis	104/225 (46)	Ref	Ref	--
Systemic lupus erythematosus	48/85 (56)	1.51 (0.91 to 2.49)	1.80 (0.99 to 3.29)	0.06
Psoriatic arthritis	22/74 (30)	0.49 (0.28 to 0.86)	0.94 (0.48 to 1.83)	0.85
Axial spondyloarthritis or other spondyloarthritis	16/48 (33)	0.58 (0.30 to 1.12)	1.11 (0.50 to 2.42)	0.80
Vasculitis	24/39 (62)	1.86 (0.93 to 3.73)	1.56 (0.66 to 3.68)	0.31
Other	63/129 (49)	1.11 (0.72 to 1.71)	0.94 (0.55 to 1.62)	0.82
Comorbidities (present vs not)				
Hypertension or cardiovascular disease	136/218 (62)	2.83 (1.01 to 4.00)	1.86 (1.23 to 2.81)	<0.01
Lung disease‡	83/127 (65)	2.71 (1.80 to 4.08)	2.48 (1.55 to 3.98)	<0.01
Diabetes	48/69 (70)	3.01 (1.76 to 5.18)	2.61 (1.39 to 4.88)	<0.01
Chronic renal insufficiency/end-stage renal disease	33/40 (83)	6.11 (2.66 to 14.04)	3.02 (1.21 to 7.54)	0.02
Ever smoker (vs never smoker)	68/129 (53)	1.41 (1.13 to 1.77)	1.18 (0.90 to 1.53)	0.23
Rheumatic disease medication prior to COVID-19 diagnosis§				
No DMARD	52/97 (54)	Ref	Ref	--
csDMARD only	249/272 (55)	1.05 (0.66 to 1.67)	1.23 (0.70 to 2.17)	0.48
b/tsDMARDs only	31/107 (29)	0.35 (0.20 to 0.63)	0.46 (0.22 to 0.93)	0.03
csDMARD+b/tsDMARD combination therapy	45/124 (36)	0.49 (0.29 to 0.85)	0.74 (0.37 to 1.46)	0.38
NSAIDs	39/111 (35)	0.55 (0.35 to 0.84)	0.64 (0.39 to 1.06)	0.08
Prednisone-equivalent glucocorticoids				
None	162/403 (40)	Ref	Ref	--
1–9 mg/day	67/125 (54)	1.72 (1.15 to 2.57)	1.03 (0.64 to 1.66)	0.91
≥10 mg/day	43/64 (67)	3.05 (1.74 to 5.32)	2.05 (1.06 to 3.96)	0.03

Gianfrancesco, Milena, et al. *Annals of the Rheumatic Diseases*. <https://doi.org/10.1136/annrheumdis-2020-217871>.

Global Rheumatology Alliance



Submitted

GRA: risk factors of mortality

Disease groups and diseases included	Medication groups and medications included
Inflammatory Joint Diseases (IJD) <ul style="list-style-type: none"> Rheumatoid arthritis (RA) Axial and peripheral spondyloarthritis (SpA) Psoriatic arthritis (PsA) Oligoarticular/polyarticular juvenile idiopathic arthritis (JIA) Other inflammatory arthritis 	Conventional synthetic DMARDs (csDMARDs) <ul style="list-style-type: none"> Methotrexate Leflunomide Sulfasalazine Antimalarials (chloroquine, hydroxychloroquine)
Connective Tissue Diseases (CTD)/Vasculitis <ul style="list-style-type: none"> Systemic lupus erythematosus (SLE) Sjögren's syndrome Systemic sclerosis Inflammatory myopathy (dermatomyositis, polymyositis) Mixed CTD Undifferentiated CTD ANCA-associated vasculitis Giant cell arteritis Behcet's disease Polymyalgia rheumatica Kawasaki disease Other vasculitis 	Biological DMARDs (bDMARDs) <ul style="list-style-type: none"> Abatacept IL-1 inhibitors IL-6 inhibitors IL-12/23, IL-17 or IL-23 inhibitors TNF inhibitors Belimumab Rituximab
Other (neither IJD nor CTD/vasculitis) <ul style="list-style-type: none"> Gout Ocular inflammation Auto-inflammatory syndromes IgG4-related disease Systemic JIA Calcium pyrophosphate deposition disease Other non-specified rheumatic diseases 	Targeted synthetic DMARDs (tsDMARDs) <ul style="list-style-type: none"> Apremilast JAK inhibitors
	Immunosuppressants (except glucocorticoids) <ul style="list-style-type: none"> Azathioprine Cyclophosphamide Cyclosporine Mycophenolate mofetil/mycophenolic acid Tacrolimus
	Glucocorticoids <ul style="list-style-type: none"> Prednisolone-equivalent dose

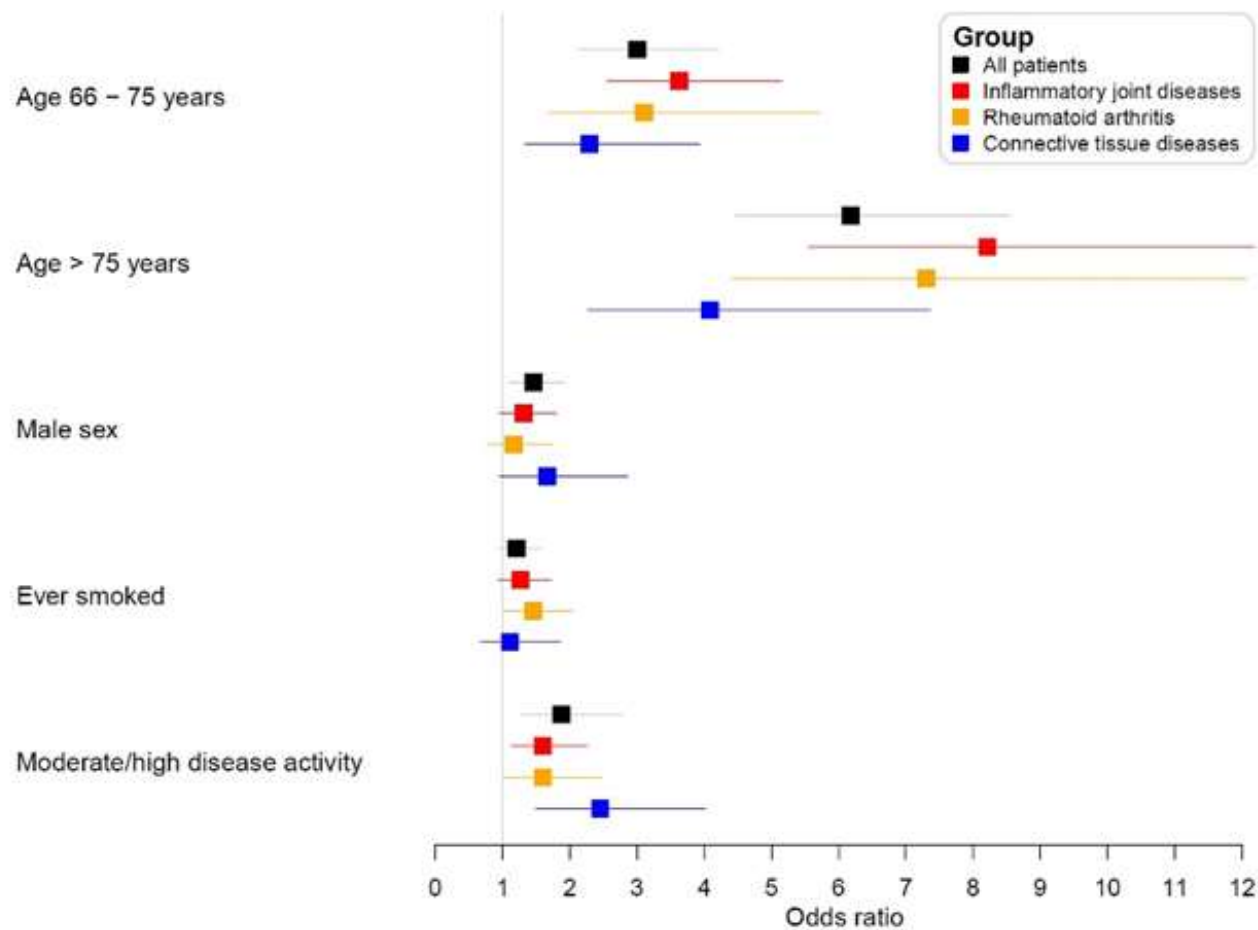
	Inflammatory joint diseases			Rheumatoid arthritis			Connective tissue diseases and vasculitis		
Parameter	Not deceased	Deceased	Total	Not deceased	Deceased	Total	Not deceased	Deceased	Total
N	2158	215	2373	1224	170	1394	1035 (100)	158	1193
Age [years]	55.7 (14.3)	71.6 (11.7)	57.1 (14.8)	59.2 (13.9)	72.5 (11.1)	60.8 (14.3)	55.1 (16.3)	66.7 (17.4)	56.7 (16.9)
Male sex	709 (32.9)	82 (38.1)	791 (33.3)	292 (23.9)	55 (32.4)	347 (24.9)	240 (23.2)	67 (42.4)	307 (25.7)
Ever smoker	443 (24.1)	65 (40.1)	508 (25.4)	260 (25.4)	56 (43.1)	316 (27.4)	185 (20.6)	36 (27.5)	221 (21.5)
African Region	10 (0.5)	1 (0.5)	11 (0.5)	7 (0.6)	1 (0.6)	8 (0.6)	2 (0.2)	1 (0.6)	3 (0.3)
Mediterranean Region	46 (2.1)	4 (1.9)	50 (2.1)	33 (2.7)	4 (2.4)	37 (2.7)	37 (3.6)	8 (5.1)	45 (3.8)
European Region	1405 (65.1)	157 (73)	1562 (65.8)	725 (59.2)	121 (71.2)	846 (60.7)	533 (51.5)	103 (65.2)	636 (53.3)
North American Region	595 (27.6)	44 (20.5)	639 (26.9)	392 (32)	38 (22.4)	430 (30.8)	397 (38.4)	35 (22.2)	432 (36.2)
South American Region	68 (3.2)	4 (1.9)	72 (3)	48 (3.9)	1 (0.6)	49 (3.5)	42 (4.1)	5 (3.2)	47 (3.9)
South-East Asian Region	8 (0.4)	0	8 (0.3)	3 (0.2)	0	3 (0.2)	2 (0.2)	0	2 (0.2)
Western Pacific Region	26 (1.2)	5 (2.3)	31 (1.3)	16 (1.3)	5 (2.9)	21 (1.5)	22 (2.1)	6 (3.8)	28 (2.3)
Remission	488 (31.2)	54 (32.1)	542 (31.3)	291 (30.9)	40 (30.5)	331 (30.8)	256 (31.1)	32 (27.1)	288 (30.6)
Severe/high disease activity	40 (2.6)	11 (6.5)	51 (2.9)	27 (2.9)	10 (7.6)	37 (3.4)	30 (3.6)	23 (19.5)	53 (5.6)
Hospitalised	774 (38.1)	201 (95.3)	975 (43.5)	497 (43.3)	158 (95.2)	655 (49.8)	522 (52.8)	153 (98.1)	675 (59)
Invasive ventilation	37 (2.1)	75 (43.9)	112 (5.8)	22 (2.2)	61 (44.5)	83 (7.3)	28 (3.4)	44 (38.3)	72 (7.7)

Submitted

Global rheumatology alliance

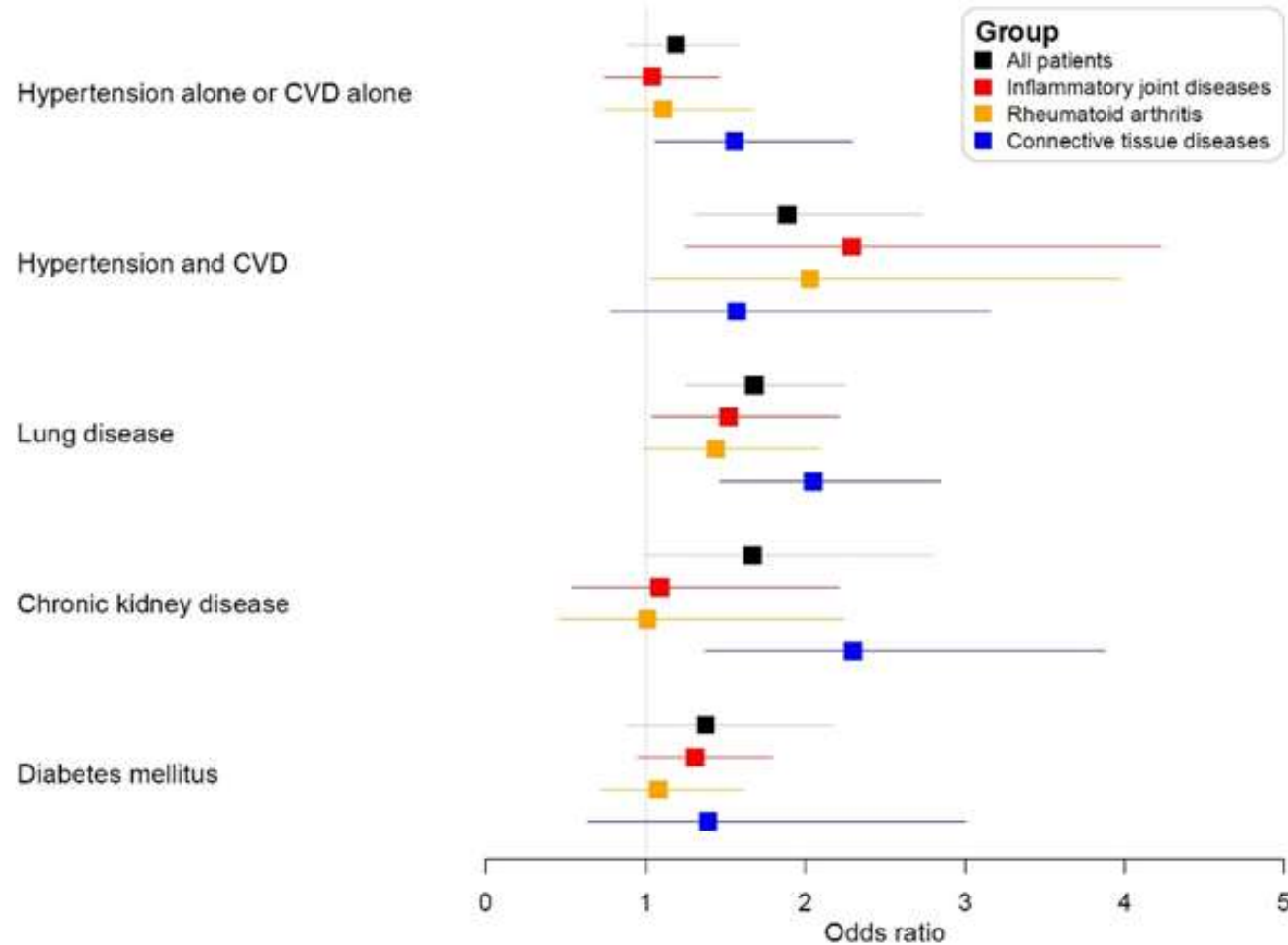
	USA	France	UK	Italy	Spain	Germany	Total
N	1005	793	435	315	247	198	2993
General							
Age [years]	55.2 (15.1)	56.2 (16.3)	61.2 (16.4)	61.9 (13.7)	59.7 (15.7)	58.2 (13.8)	57.6 (15.6)
Male sex	241 (24)	272 (34.3)	169 (38.9)	107 (34)	95 (38.5)	74 (37.4)	958 (32)
Ever smoker	261 (27.3)	80 (10.1)	132 (45.2)	86 (29.5)	60 (27.5)	14 (77.8)	633 (24.6)
RMD Remission	211 (22.2)	N/A	109 (29.9)	93 (29.5)	113 (46.7)	102 (56.4)	628 (30.6)
Outcomes							
Death	70 (7.0)	62 (7.8)	91 (20.9)	53 (16.8)	21 (8.5)	15 (7.6)	312 (10.4)
Hospitalised	357 (39.1)	334 (42.1)	275 (65.8)	201 (64.2)	133 (55.6)	60 (30.6)	1360 (47.3)
Invasive ventilation	64 (7.9)	N/A	28 (7.5)	23 (7.5)	7 (3)	15 (7.7)	137 (5.8)
Inflammatory joint diseases							
Rheumatoid arthritis	388 (38.6)	247 (31.2)	187 (43.0)	105 (33.3)	88 (35.6)	99 (50.0)	1114 (37.2)
Spondyloarthritis	47 (4.7)	193 (24.3)	29 (6.7)	24 (7.6)	32 (13)	19 (9.6)	344 (11.5)
Psoriatic arthritis	101 (10)	74 (9.3)	61 (14)	64 (20.3)	31 (12.6)	32 (16.2)	363 (12.1)
JIA (poly, oligo, not systemic)	7 (0.7)	2 (0.3)	2 (0.5)	2 (0.6)	3 (1.2)	0	16 (0.5)
Other inflammatory arthritis	41 (4.1)	15 (1.9)	28 (6.4)	3 (1)	3 (1.2)	0	90 (3)
Total IJD	577 (57.4)	531 (67)	305 (70.1)	198 (62.9)	157 (63.6)	150 (75.8)	1918 (64.1)
Connective tissue diseases / Vasculitis							
Systemic lupus erythematosus	167 (16.6)	50 (6.3)	28 (6.4)	18 (5.7)	27 (10.9)	9 (4.5)	299 (10)
Connective tissue diseases (other than SLE)	186 (18.5)	90 (11.3)	38 (8.7)	53 (16.8)	44 (17.8)	19 (9.6)	430 (14.4)
Vasculitis	67 (6.7)	71 (9)	51 (11.7)	44 (14)	22 (8.9)	18 (9.1)	273 (9.1)
Total CTD	394 (39.2)	211 (26.6)	111 (25.5)	114 (36.2)	85 (34.4)	43 (21.7)	958 (32)
Other rheumatic diseases							
Total	132 (13.1)	52 (6.6)	53 (12.2)	8 (2.5)	20 (8.1)	13 (6.6)	278 (9.3)

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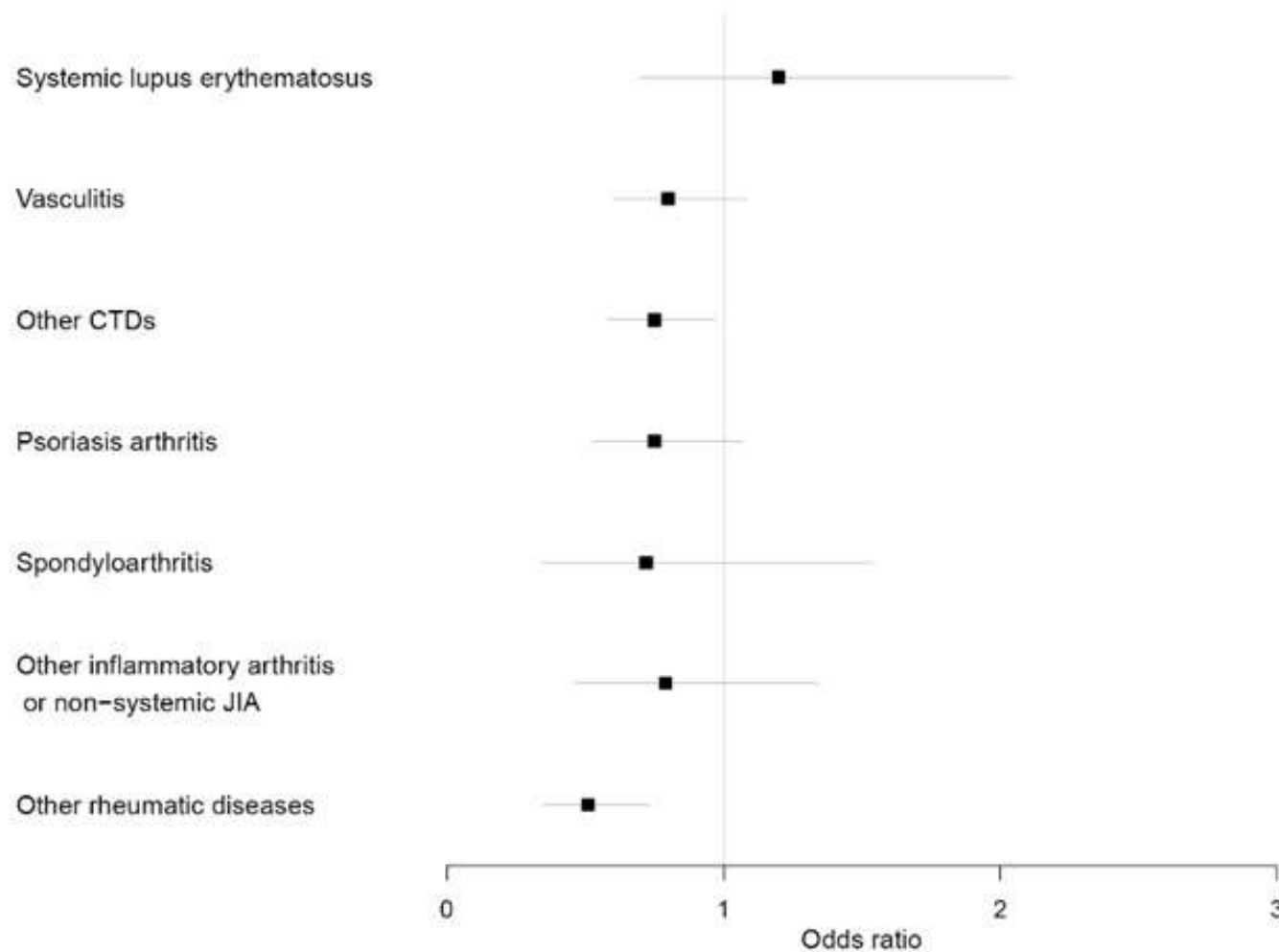
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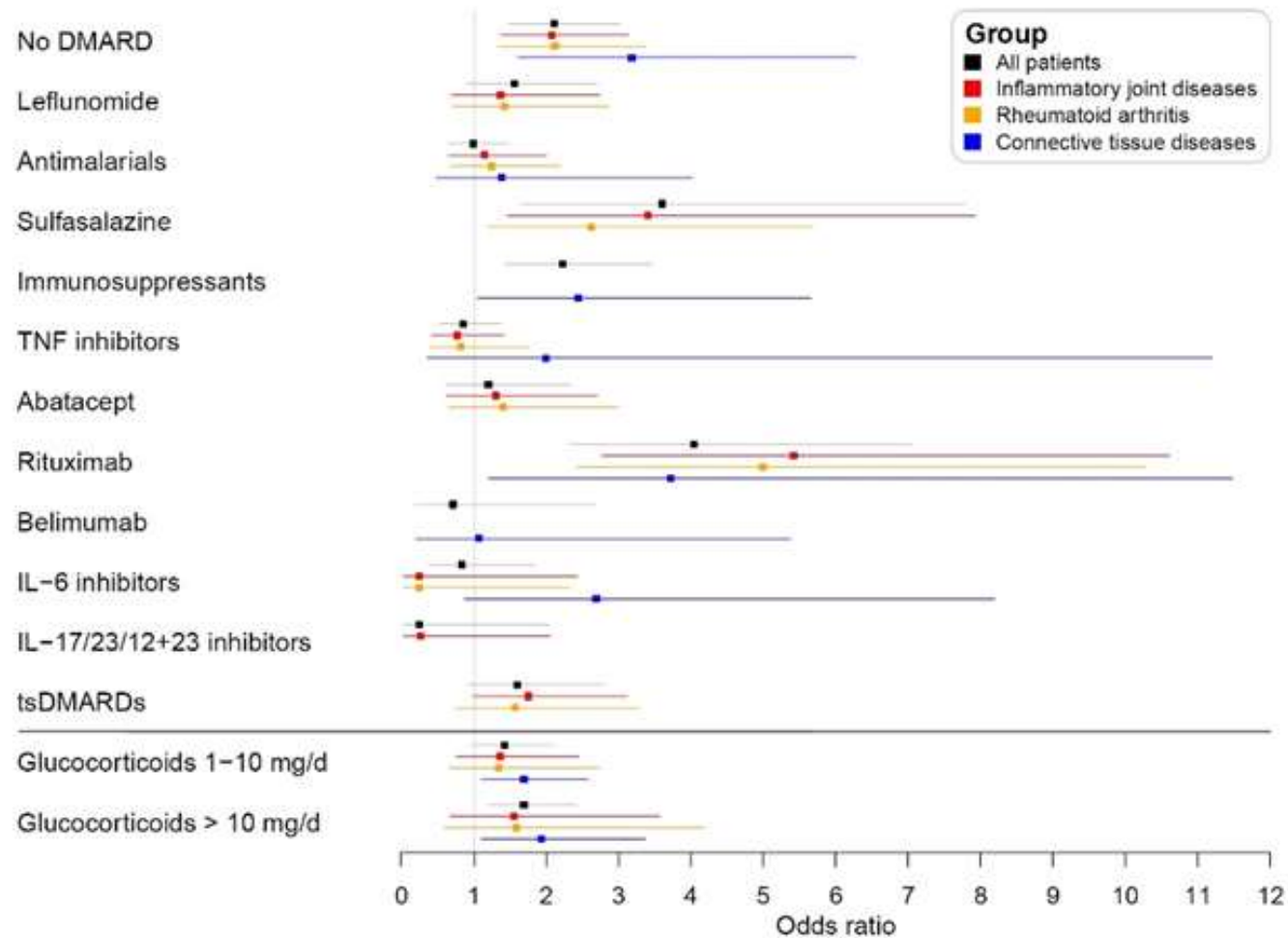
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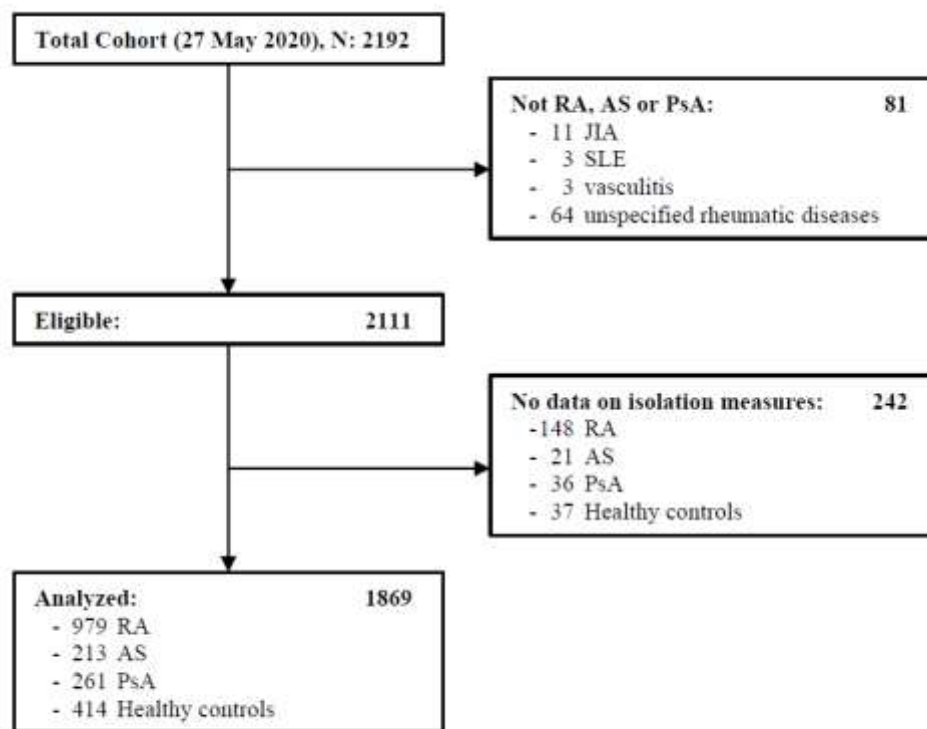
Seroprevalence of COVID in RMD

Euro-COVIMID Study

Disease / Center	Lupus	Sjögren	RA	AxSpA	GCA	Total
Germany	106	101	177	168	102	654
France	139	122	154	98	89	602
Italy	130	102	121	105	63	521
Portugal	125	106	144	128	12	515
Spain	47	20	136	83	13	299
UK	4	1	30	23	2	60
Total	551	452	762	605	281	2651



Incidence of COVID-19 in RMD



Patient characteristics	All patients (n=1455)	RA (n=979)	AS (n=215)	PsA (n=261)	Control (n=414)
Mean age – yr	55 ± 13	58 ± 12	48 ± 13	55 ± 13	53 ± 13
Female sex – no. (%)	934 (64)*	728 (74)	87 (41)	119 (46)	298 (72)
BMI (IQR)	25 (23-28)*	25 (22-28)	25 (22-28)	26 (24-30)	24 (22-27)
Smoking – no. (%)	178 (12)*	126 (13)	35 (16)	17 (7)	34 (8)
Alcohol consumption – no. (%)	993 (68)**	655 (67)	151 (70)	187 (72)	328 (79)
PCR confirmed COVID-19 – no. (%)	5 (0.3)	5 (0.5)	0	0	2 (0.5)
Coexisting conditions – no. (%)					
Cardiovascular disease	157 (11)*	107 (11)	22 (10)	28 (11)	30 (7)
Chronic pulmonary disease	149 (10)*	108 (11)	20 (9)	21 (8)	22 (5)
Diabetes	92 (6)*	58 (6)	12 (6)	22 (8)	13 (3)
Co-existing immune disorder	61 (4)*	35 (4)	14 (7)	12 (5)	8 (2)
Rheumatic medication – no. (%)					
csDMARDs	877 (60)	712 (73)	17 (8)	148 (57)	N.A.
Methotrexate	736 (51)	595 (61)	6 (3)	135 (52)	N.A.
Hydroxychloroquine	159 (11)	157 (16)	1 (0.4)	1 (0.5)	N.A.
Oral glucocorticoids	161 (11)	139 (14)	5 (2)	17 (7)	2 (0.4)
TNF inhibitor	563 (39)	336 (34)	106 (49)	121 (46)	N.A.
Etanercept	312 (22)	184 (19)	56 (26)	72 (28)	N.A.
Adalimumab	195 (13)	115 (12)	40 (19)	40 (15)	N.A.
Golimumab	16 (1)	5 (0.5)	7 (3)	4 (2)	N.A.
Infliximab	25 (2)	21 (2)	1 (0.5)	3 (1)	N.A.
Certolizumab pegol	15 (1)	11 (1)	2 (0.9)	2 (0.8)	N.A.
IL-6 inhibitor	19 (1)	19 (2)	0	0	N.A.
IL-17 inhibitor	17 (1)	2 (0.2)	8 (4)	7 (3)	N.A.
Isolation measures* – no. (%)					
None	16 (1)	11 (1)	2 (1)	3 (1)	4 (1)
Hygiene measures	66 (5)	48 (4)	5 (2)	13 (5)	11 (3)
Social distancing	688 (47)	459 (47)	108 (50)	121 (46)	272 (66)
Staying indoors as much as possible	572 (39)	374 (38)	89 (41)	109 (42)	118 (29)
Total isolation	94 (7)	74 (8)	9 (4)	11 (4)	4 (1)

Hooijberg F, et al. *Lancet Rheumatol* 2020; [https://doi.org/10.1016/S2665-9913\(20\)30286-1](https://doi.org/10.1016/S2665-9913(20)30286-1).

Incidence of COVID-19 in RMD

	Crude model ^a			Adjusted model ^b		
All patients	2.0	(1.6 – 2.6)	<i>p</i> < 0.01	1.8	(1.5 – 2.4)	<i>p</i> < 0.01
RA patients	2.0	(1.6 – 2.6)		1.7	(1.3 – 2.3)	
AS patients	2.0	(1.4 – 2.8)		2.4	(1.7 – 3.6)	
PsA patients	2.1	(1.5 – 2.8)		2.0	(1.4 – 2.8)	
Biological DMARD users	2.3	(1.8 – 3.0)		2.2	(1.6 – 2.9)	
Non-biological DMARD users	1.9	(1.4 – 2.4)		1.7	(1.3 – 2.2)	

	Crude model ^a			Adjusted model ^b		
Female patients						
All female patients	2.5	(1.9 – 3.3)	<i>p</i> < 0.01	2.1	(1.6 – 2.9)	<i>p</i> < 0.01
Female RA patients	2.4	(1.8 – 3.2)		2.0	(1.4 – 2.7)	
Female AS patients	2.5	(1.5 – 4.1)		2.9	(1.7 – 4.8)	
Female PsA patients	3.0	(1.9 – 4.6)		2.5	(1.6 – 4.0)	
Female biological DMARD users	2.9	(2.1 – 4.0)		2.5	(1.8 – 3.6)	
Female non-biological DMARD users	2.2	(1.6 – 3.0)		1.8	(1.3 – 2.6)	
Male patients						
All male patients	1.3	(0.9 – 2.0)	<i>p</i> = 0.17	1.4	(0.9 – 2.2)	<i>p</i> = 0.15
Male RA patients	1.3	(0.8 – 2.1)		1.3	(0.8 – 2.1)	
Male AS patients	1.5	(0.9 – 2.4)		1.8	(1.0 – 3.1)	
Male PsA patients	1.3	(0.8 – 2.2)		1.3	(0.8 – 2.3)	
Male Biological DMARD users	1.4	(0.9 – 2.2)		1.5	(0.9 – 2.5)	
Male Non-biological DMARD users	1.3	(0.8 – 2.0)		1.3	(0.8 – 2.1)	
Rheumatic patients						
Biological DMARD users	1.2	(1.0 – 1.5)	<i>p</i> = 0.06	1.3	(1.1 – 1.7) ^c	<i>p</i> = 0.02

Hooijberg F, et al. *Lancet Rheumatol* 2020; [https://doi.org/10.1016/S2665-9913\(20\)30286-1](https://doi.org/10.1016/S2665-9913(20)30286-1).

Preliminary conclusions

The incidence of COVID-19 in RMD may be lower due to do prevention

The outcome of RMD may be more severe

The main determinants of clinical outcome of COVID in RMDs

- Demographics
- Healthcare organizations / country
- Comorbid conditions
- Disease activity
- Treatments
 - Glucocorticoids
 - Major immunosuppressants

It is not known how COVID-19 impacts on RMDs

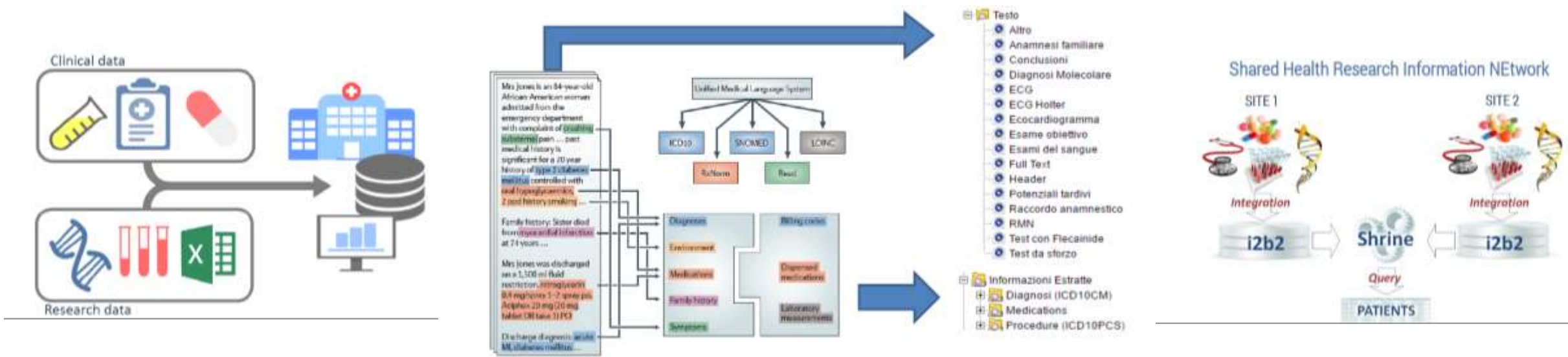
Global networking is feasible and effective

REal World evidence IN rheumatic Diseases (REWIND)



REWIND methodology

I2b2 (Informatics for Integrating Biology at the Bedside) is an open source software program, partly funded by the NIH



REWIND - General Objectives



TO GENERATE UPDATED IMPACT
DATA ON RMDS



TO TRACK CLINICAL PATHWAYS OF
RMDS



TO SET UP A SURVEILLANCE
SYSTEM FOR NEW DRUGS IN RMDS

Aknowledgments



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