Male												Female			
Steroid-exposed						Never exposed		Steroid-exposed						Never exposed	
Age group	BMI group	Patients	Absolute rate (per 1,000 patient years)	Patients	Absolute rate (per 1,000 patient years)	p-value	Patients	Absolute rate (per 1,000 patient years)	Patients	Absolute rate (per 1,000 patient years)	p-value				
18-42	1: Underweight	1,242	2.0	1,195	0.0	0.5661	3,079	4.5	3,486	0.9	0.1361				
	2: Normal	18,798	2.2	19,638	0.0	<0.0001	42,234	0.9	47,340	0.1	0.0049				
	3: Overweight	16,536	2.6	15,114	0.0	0.0001	24,893	0.5	24,009	0.1	0.2382				
	4: Obese +	10,311	0.6	8,453	0.0	0.2874	26,600	0.6	20,320	0.3	0.4614				
43-67	1: Underweight	1,254	27.4	683	0.0	0.0040	2,420	30.9	1,990	18.5	0.1141				
	2: Normal	27,037	8.6	26,569	2.0	<0.0001	45,467	15.9	50,423	6.1	<0.0001				
	3: Overweight	42,428	4.3	43,872	0.7	<0.0001	42,620	10.8	43,253	4.1	<0.0001				
	4: Obese +	31,478	2.5	30,852	0.8	0.0007	45,339	6.0	39,876	2.4	<0.0001				
68-92	1: Underweight	936	30.3	432	10.3	0.1505	1,532	70.9	1,239	26.6	0.0003				
	2: Normal	15,891	11.3	15,021	4.5	<0.0001	18,308	42.3	18,717	18.6	<0.0001				
	3: Overweight	21,371	7.3	23,137	1.8	<0.0001	19,149	26.2	19,760	12.9	<0.0001				
	4: Obese +	11,216	5.6	11,396	1.9	0.0021	14,453	20.0	13,614	8.7	<0.0001				

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POS1433 IMPACT OF RHEUMATOID ARTHRITIS ON STRESS: A SYSTEMATIC SCOPING REVIEW

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Background: The literature about the impact of Rheumatoid Arthritis (RA) on mental health is mostly focused on depression and anxiety. Yet, patients can experience stress without depressed mood or anxiety.

Objectives: To examine the impact of RA on psychological stress excluding depression and anxiety focusing on 3 questions: 1) What is the stress level of RA patients compared to a control group? 2) Which types of stress do RA patients experience? 3) Which are risk factors to develop stress as an RA patient?

Methods: Four scientific databases, EMBASE, PubMed (including MEDLINE), Web of Science Core Collection and Cochrane Library, were systematically

Table 1. Included Studies

First Author	Year	Country	Population	Age Mean ±SD	Stress Instrument	Quality Assessment
Bugajska	2010	Poland	N=437 Polish N=137 German	>50y (71%) >50y (38%)	SF36v2	AXIS: 16/20
Coty	2017	USA	N=80	54y ±12y	RCQW	AXIS: 17/20
Cunha	2016	Portugal	N=80	58y	DASS-21	AXIS: 10/20
Goulia	2015	Greece	N=168	55y ±13y	SCL-90R	MINORS: 11/16
Latman	1996	USA	RA, N=128 OA, N=79	56y 63y	SRRS	AXIS: 20/20
Mancuso	2006	USA	RA, N=122 HC, N=122	49y ±12y 49y ±12y	DUSOCS	MINORS: 20/24
Nyklicek	2015	The Netherlands	N=201	57y ±12y	PSS	MINORS: 13/16
Persson	2005	Sweden	N=158	52y	SCL-90R	MINORS: 12/16
Rahim	2018	Malaysia	N=189	52y ±11y	DASS-21	AXIS: 17/20
Rice	2017	Canada	RA, N=226 CP, N=229	58y ±15y 45y ±12y	DASS-21	AXIS: 17/20
Rice	2016	Canada	RA, N=163 CP, N=167	56y ±13y 45y ±11y	DASS-21	AXIS: 18/20
Richter	2018	Germany	RA, N=163 HC, N=167	48y ±10y 43y ±10y	ERI	AXIS: 17/20
Smith	2002	USA	RA, N=93 OA, N=82 HC, N=80	RA, 62y OA, 65y HC, 62y	1 question probing stress	MINORS: 17/24
Treharne	2007	UK	N=134	55y	PSS	MINORS: 11/16
Turner-Cobb	1998	UK	RA, N=13	42y ±8y	LEI/HUS	MINORS: 17/24
Zautra	1997	USA	CP, N=24 N=41	39y ±4y 55y ±10y	ISLE	MINORS: 12/16

searched from inception until 19/04/2020. Eligible studies included psychological stress in RA patients as outcome. Two reviewers (CV&AVB) independently screened titles and abstracts, and later full texts for eligibility. Full-text screening excluded studies without a separate RA population, with a focus on only anxiety and/or depression or not answering at least 1/3 research questions. Quality was appraised by MINORS/AXIS tools.

Results: From 11 115 potentially relevant studies, 16 studies met the inclusion criteria (Table 1). Remarkably, 13 different stress measurement instruments were picked-up in this review. Work stress and interpersonal stress seem more prevalent in RA patients compared to healthy controls. Stress at disease onset was more prevalent in RA compared to osteoarthritis. Psychological stress was higher in patients with chronic pain compared to RA. Role stress, social stress and work stress were induced by RA. More disability, more pain, less social support, lower income, younger age and personality factors like excessive worrying, pessimism, and sensitivity to anxiety, seem to increase the risk for increased stress levels.

Conclusion: This scoping review is to our knowledge the first to address the heterogeneity of measurement tools and definitions of stress in RA research. It provides the basis for further research, which is needed to predict different stress trajectories and respond to these with patient-centered interventions.

Disclosure of Interests: None declared

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POS1434 WHICH PROGNOSTIC FACTORS MIGHT PREDICT THE NEED FOR TREATMENT ADAPTATION IN EARLY RHEUMATOID ARTHRITIS? A COMPARISON OF MACHINE LEARNING, SURVIVAL ANALYSIS AND REGRESSION METHODS

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Background: Current EULAR guidelines recommend treating RA early, intensively and to-target. A data-driven tool for planning the optimal moment for subsequent visits might adapt visit schedules more to the patient's needs, without losing treatment quality.

Objectives: To determine the optimal statistical model and clinical factors to predict the time to a treatment adaptation in early RA patients.

Methods: This study included 379 patients from the treat-to-target Care in Rheumatoid Arthritis (CareRA) trial. The CareRA protocol included 2 predefined treatment adaptation steps for patients not reaching low disease activity (DAS-28CRP<3.2). The 1st adaptation was an MTX dose increase and the second one was adding/increasing the dose of a 2nd csDMARD. Three predictive models (Cox Proportional Hazards, Linear Multi-Task Regression and Random Survival Forest) were trained and validated to predicting time until these 2 adaptations. Factor selection for these models was performed by applying Cox Proportional Hazards with LASSO penalty to each set of demographic and clinical variables recorded at baseline, w4 and w8. Models used these factors at these 3 time points to predict future treatment adaptations. Model performance was estimated by the Uno Concordance Index with five-fold cross-validation. Missing data were imputed by interpolation or mean score.

Results: Factors selected to predict the first per protocol change included TJC, SJC, HAQ, CRP, pain and morning stiffness>15min. Factors selected to predict the second per protocol change included TJC, SJC, PGA, PhGA. Uno Concordance indices showed similar scores per different statistical model but higher scores at w4 and w8 compared to baseline indicating a better predictive performance (Table 1. next page).

Table 1. Uno Concordance Scores. Format 'mean (min-max)'

		Baseline	Week 4	Week 8
Cox Proportional Hazards	Change 1	0.63 (0.59-0.69)	0.72 (0.68-0.80)	0.75 (0.69-0.82)
	Change 2	0.58 (0.50-0.66)	0.75 (0.65-0.87)	0.78 (0.65-0.93)
Linear Multi-Task Regression	Change 1	0.65 (0.62-0.68)	0.72 (0.68-0.78)	0.75 (0.69-0.79)
	Change 2	0.58 (0.51-0.68)	0.72 (0.67-0.82)	0.77 (0.68-0.89)
Random Survival Forest	Change 1	0.64 (0.58-0.67)	0.71 (0.66-0.78)	0.76 (0.68-0.80)
	Change 2	0.56 (0.50-0.68)	0.72 (0.60-0.82)	0.77 (0.64-0.92)

Conclusion: Our data-driven approach identified predictive clinical factors with a high face validity including joint counts, functionality scores and global health indicators. The different model approaches did not seem to increase the predictive capacity performance. However, our results underline that not so much the baseline disease status but rather the early response to initial treatment reflected in the selected predictive factors can be used for prediction of the need for further treatment adaptation. These models will have to be enriched with patient reported outcomes to further improve predictive performance.

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POS1435

CLINICAL CHARACTERIZATION AND PREDICTIVE FACTORS FOR PROGRESSION IN A COHORT OF ILD PATIENTS WITH FEATURES OF AUTOIMMUNITY: ARE IPAF CRITERIA SUFFICIENT?

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Background: It is unknown whether patients with interstitial lung disease (ILD) and only some features of autoimmunity have a different natural history from those with a defined connective tissue disease (CTD-ILD). The classification criteria for "ILD with autoimmune features" (IPAF) may not be able to characterize all these patients, especially those with a usual interstitial pneumonia (UIP) pattern [1].

Objectives: To determine clinical characteristics and predictive factors for progression in a cohort of ILD patients with features of autoimmunity, through the application of classification criteria for IPAF and specific CTD, whenever possible.

Methods: We retrospectively selected a cohort of consecutive patients with ILD as onset manifestation and features of autoimmunity (at least 1 autoantibody and/or 1 clinical sign/symptom), evaluated by our multidisciplinary unit from March 2009 to March 2020. All the final diagnoses were revised according to the latest CTD and IPAF criteria. Patients were followed up for 33 (16.5-69.5) months.

Results: Of the 101 patients enrolled (67.4±10.9 yrs, F/M ratio 65/36), 53 (52.5%) and 37 (36.6%) respectively satisfied the CTD and IPAF criteria. Eleven patients (10.9%) did not satisfy IPAF criteria because of only 1 item (clinical or serologic) within the IPAF domains and a UIP pattern; we defined this group as "autoimmune" UIP (AI-UIP). All the 8 patients initially classified as undifferentiated CTD had sufficient IPAF criteria. Among the IPAF patients (68.2±10.1 years, F/M ratio 20/17), the most common findings were: Nonspecific interstitial pneumonia pattern (56.8%), antinuclear antibodies positivity (43.2%) and arthritis (24.3%). The combination of a positive morphologic and serologic domain was the most common to reach the diagnosis (48.6%). Some IPAF patients had features not included in IPAF criteria, such as non-anti-synthetase myositis-specific antibodies (21.6%), objective sicca syndrome (13.5%) and anti-myeloperoxidase antibodies (2.7%). Over a median of 17 months, 2 IPAF patients (5.4%) developed a definite UIP pattern, while 4 (10.8%) a specific CTD. Comparing the IPAF, CTD-ILD and AI-UIP groups, no statistically significant differences were found in the mean age, sex distribution, smoking habits and mean duration of the disease. However, IPAF patients had a significantly higher prevalence of arterial hypertension and left-sided heart failure and a lower predominance of UIP pattern as expected (10.8% vs. 32.1% vs. 100%, $p < 0.01$). Although no differences were found at the diagnosis, at 1 year the proportion of IPAF patients with radiological progression of the fibrosis and/or functional deterioration (defined by a decline

in FVC of $\geq 10\%$ and/or DLCO of $\geq 15\%$ predicted) was lower to that of CTD-ILD and AI-UIP (17.1% vs. 31.4% vs. 63.6%, $p = 0.01$). Fewer IPAF patients needed oxygen support (8.6% vs. 31.4% vs. 36.4, $p = 0.02$). Considering the overall 101 patients, having an IPAF and a UIP pattern respectively predicted a slower (OR: 0.37, $p = 0.04$) and a faster (OR: 3.56, $p = 0.01$) ILD progression at the multivariate analysis.

Conclusion: In our cohort, IPAF criteria were useful to identify a subset of patients with a slower ILD progression and a possible evolution to CTD (10-15% of cases) [2]. These criteria do not characterize all the patients with a UIP pattern and limited features of autoimmunity, which seem to have a worse prognosis, independently from the final diagnosis. Further studies are needed to clarify if the prognosis of AI-UIP is different from that of idiopathic pulmonary fibrosis.

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POS1436

EPIDEMIOLOGY OF LATENT TUBERCULOSIS INFECTION IN PATIENTS WITH RHEUMATIC IMMUNE-MEDIATED DISEASES. SINGLE UNIVERSITY STUDY OF 1117 PATIENTS

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Background: Patients with rheumatologic immune-mediated diseases (R-IMID) with Latent tuberculosis infection (LTBI) requiring biologic therapy (BT) are at an increased risk of active tuberculosis (TB). Screening of LTBI with tuberculin skin test (TST) and/or Interferon (IFN)- γ release assays (IGRA) is recommended before starting of BT.

Objectives: In patients with R-IMID previously to BT our aim was to assess **a)** prevalence of LTBI, **b)** importance of using a booster test in negative TST and **c)** to compare TST with the IGRA test.

Methods: Cross-sectional single University Hospital study including all patients diagnosed with R-IMID who underwent a TST and/or IGRA in the last five years (2016-2020).

TST was performed by a subcutaneous injection of 0.1 ml of purified protein derivative (PPD) with a reading after 72 hours. TST was considered positive with an induration of more than 5 mm of diameter. If the first TST was negative, a new TST (Booster) was performed between 1 and 2 weeks after the first TST.

LTBI was diagnosed by a positive IGRA and/or TST and absence of active TB (Chest radiograph). Diagnosis with IGRA vs TST was compared (Cohen's kappa coefficient).

Results: We included 1117 patients (741 women/376 men), mean age 53±15 years with LTBI. Chest radiograph was normal in most of the patients, only 39 patients (3.5%) presented signs of previous TB infection, mostly granuloma. Total LTBI prevalence was 31.7% (354/1117). LTBI prevalence in different underlying R-IMID ranges from 35% in vasculitis up to 26.5% in connectivopathies (Figure 1).

Booster was positive in 66 patients (7.7%) out of 859 patients with a negative simple TST. Results of TST (+booster) and IGRA tests are shown in Table 1. TST (+booster) was positive in 187 patients (22.9%) out of 817 with a negative or indeterminate IGRA test. IGRA test was positive in 30 (3.8%) out of 793 patients with a negative TST (+booster). Cohen's Kappa coefficient between TST (+booster) and IGRA (QFT-plus), was 0.381.

Conclusion: LTBI is frequent between patients with R-IMID. Booster after negative simple TST may be useful, since it can detect false negatives for LTBI. IGRA and TST(+booster) show a low grade of agreement. Therefore, performing both tests before BT may be recommendable.

Table 1. Results of TST (+booster) and IGRA test

		IGRA (QFT-Plus)			
		Positive	Negative	Indeterminate	Unavailable
TST	Positive	89	142	45	48
	Negative	30	500	130	133
(+Booster)					
		Total	119	642	175
				181	1117

* Cohen's kappa coefficient: 0.381