and 63% positive for anti-cyclic citrullinated peptide antibodies. Overall, 33.1% (591/1776) of patients had an MTC. A markedly larger percentage of patients with high disease activity had MTC (range 55.1%–43.5%) compared to patients with moderate disease (range 38.7%–27.8%) (table 1). Sensitivity, specificity, predictive values, and accuracy at each DAM threshold level varied markedly by DAM, with RAPID3 having a higher sensitivity, lower specificity, and less accuracy than DAS28 or CDAI (table 2).

Abstract FRI0018 – Table 1. Rates of MTC Stratified by DAM

	Patients with MTC, n/N (%)		
	DAS28	CDAI	RAPID3
High	165/313 (52.7%)	231/419 (55.1%)	346/795 (43.5%)
Moderate	285/737 (38.7%)	219/601 (36.4%)	155/558 (27.8%)
Low	72/283 (25.4%)	105/547 (19.2%)	47/217 (21.7%)
Remission	69/443 (15.6%)	36/209 (17.2%)	43/206 (20.9%)

n, number of patients with MTC; N, number of patients with level of disease severity.

Abstract FRI0018 – Table 2. Performance of DAMs for Prediction of MTC

		Positive Threshold		
		High	High/ Moderate	High/ Moderate/ Low
Sensitivity	DAS28	27.9%	76.1%	88.3%
	CDAI	39.1%	76.1%	94.9%
	RAPID3	58.5%	84.8%	92.7%
Specificity	DAS28	87.5%	49.4%	31.6%
	CDAI	84.1%	51.9%	14.6%
	RAPID3	62.1%	28.1%	13.8%
Positive Predictive Value	DAS28	52.7%	42.9%	39.2%
	CDAI	55.1%	44.1%	35.4%
	RAPID3	43.5%	37.0%	34.9%
Negative Predictive Value	DAS28	70.9%	80.6%	84.4%
	CDAI	73.5%	81.3%	82.8%
	RAPID3	75.0%	78.7%	79.1%
Accuracy	DAS28	67.7%	58.3%	50.5%
	CDAI	69.1%	60.0%	41.0%
	RAPID3	60.9%	47.0%	40.0%

Conclusions: Most patients with high/moderate disease activity did not have a MTC. This observation was consistent regardless of which DAM was utilised. MTC increased with disease activity with all DAMs; however, DAS28 and CDAI appeared to have greater accuracy than RAPID3 at predicting MTC at all disease severity thresholds. There is need for continued evaluation of DAM thresholds for defining disease activity for MTC decisions, better DAMs, and/or better application of DAMs in clinical practice to improve the treatment of patients with active RA.

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FRI0019

ARE DISEASE ACTIVITY, DISABILITY OR PSYCHOLOGICAL FACTORS MOST ASSOCIATED WITH PATIENTS WITH RHEUMATOID ARTHRITIS BEING SATISFIED WITH THEIR CONDITION AFTER 12 MONTHS FOLLOWING TREATMENT ONSET?

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Background: An important treatment goal in the management of patients with rheumatoid arthritis (RA) is patients being satisfied with their condition, the patient acceptable symptom state (PASS). It is unclear whether reduction in disease activity, the main therapeutic aim of RA treatment, is associated with reaching PASS, or whether reductions in other factors are also important.

Objectives: To analyse change over one year of disease activity, patient reported outcomes (PROs) and psychological factors and their association with PASS at one year.

Methods: The Rheumatoid Arthritis Medication Study (RAMS) is a prospective cohort of patients with RA starting MTX for the first time in the United Kingdom. At baseline and one year, patients reported demographics and completed pain and fatigue visual analogue scales (VAS-pain/VAS-fatigue), the Hospital Anxiety and Depression Scale (HADS-A, HADS-D) and the Health Assessment Questionnaire (HAQ). A research nurse performed a 28 swollen and tender joint count (SJC28/TJC28) and the disease activity score (DAS28) was calculated. Patients answered the question "Is your current condition satisfactory, when you take your general functioning and your current pain into consideration?" at baseline and at one year. Only patients not in PASS at baseline are included in this analysis. Change in disease related factors (SJC28, TJC28, DAS28), PROs (HAQ, VAS-pain, VAS-fatigue), and psychological factors (HADS-A, HADS-D) from baseline to one year were calculated (see table 1). Predictors of PASS at one year were assessed using multivariable logistic regression, adjusting for age and gender. The discriminative power of disease activity, PROs and psychological factors were assessed by comparing the area under the curve (AUC) of the receiver operating characteristic curve.

Results: Of 358 not in PASS at baseline (mean (SD) age: 58.1 (13.0) years; 244 (68.2%) women), 241 (67.3%) were in PASS after one year. The only independent predictors of PASS were change in HAQ, VAS-pain and HADS-D (OR (95% CI) per unit change from baseline: HAQ 0.38 (0.16, 0.91); VAS-pain 0.96 (0.95, 0.98); HADS-D 0.86 (0.75, 0.99)). The model containing PROs had significantly greater AUC compared to a disease activity model (0.91 vs. 0.84, $p=0.004$) and a psychological factors model (0.91 vs. 0.81, $p<0.0001$).

Abstract FRI0019 – Table 1. Baseline, one year and change scores stratified by whether patients were in PASS at one year

		Median (IQR) baseline score		Median (IQR) one year score		Median (IQR) Change	
Variable		PASS at one year	Not-PASS at one year	PASS at one year	Not-PASS at one year	PASS at one year	Not-PASS at one year
Disease activity	SJC28	6.5 (2.5, 11.0)	6.0 (3.0, 12.0)	0.0 (0.0, 2.0)	3.0 (0.0, 7.0)†	-5 (-9, -2)	-2 (-6, 1)†
	TJC28	6.0 (3.0, 12.0)	9.0 (5.0, 17.0)†	1.0 (0.0, 4.0)	8.0 (2.0, 14.0)†	-4 (-9, -1)	-2 (-8, 3)†
	DAS28	4.6 (3.8, 5.4)	4.9 (4.2, 5.8)	2.7 (2.1, 3.5)	4.3 (3.5, 5.3)†	-1.6 (-2.9, -0.8)	-0.6 (-1.6, 0.4)†
PROs	HAQ	1.3 (0.8, 1.8)	1.4 (1.0, 1.9)	0.6 (0.1, 1.1)	1.5 (1.0, 1.9)†	-0.5 (-1.0, -0.1)	0.0 (-0.4, 0.3)†
	VAS-Pain	63 (46, 75)	68 (50, 80)	18 (7, 33)	60 (41, 76)†	-38 (-55, -18)	-5 (-24, 9)†
	VAS-Fatigue	62 (37, 74)	72 (57, 85)†	29 (13, 54)	70 (55, 83)†	-24 (-43, -1)	-1 (-17, 12)†
Psychological	HADS-D	7 (4, 10)	8 (5, 10)	3 (1, 6)	8 (5, 11)†	-2 (-5, 0)	1 (-1, 2)†
	HADS-A	6 (4, 10)	8 (4, 12)†	4 (2, 8)	8 (4, 11)†	-2 (-4, 0)	0 (-2, 2)†

† $p<0.05$, † $p<0.01$ – PASS groups compared using quantile regression

DAS28 = Disease Activity Score 28, HADS-A = Hospital Anxiety and Depression Scale (Anxiety), HADS-D = Hospital Anxiety and Depression Scale (Depression), HAQ = Health Assessment Questionnaire, IQR = interquartile range, PASS = Patient acceptable symptom state, PROs = Patient Reported Outcomes, SJC28 = swollen joint count (28), TJC28 = tender joint count (28), VAS = visual analogue scale.

Conclusions: Change in PROs have a greater association with attaining PASS at one year compared to disease related or psychological factors and should be taken into account when designing treatment strategies.

Disclosure of Interest: None declared

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FRI0020

ANTI-CEP-1 ANTIBODIES AND OTHER AUTOANTIBODIES IN EARLY ARTHRITIS

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Background: As it is very important to identify patients with a high risk of developing rheumatoid arthritis (RA), new, diagnostic methods, evaluating the possibility of progression from undifferentiated arthritis (UA) to RA are needed.

Objectives: The aim of this work was the evaluation of the frequency of rheumatoid factor, anti-cyclic citrullinated peptide (anti-CCP) antibodies, mutated citrullinated vimentin antibodies (a-Sa), anti-CEP-1 antibodies, anti-filaggrin antibodies (AFA), heterogeneous nuclear ribonucleoprotein compies/anti-RA33-antibody (HnRNP/RA33), anti-CarP antibodies (a-Carp) in patients with early arthritis.

Methods: 74 patients with early arthritis and 20 healthy volunteers were enrolled to the study. 51 patients were diagnosed with RA, 23 with UA. Exclusion criteria were the application of disease-modifying antirheumatic drugs or glucocorticosteroids. In all patients the following laboratory tests were performed: inflammatory markers, rheumatoid factor (RF) and antibodies mentioned above, together with necessary diagnostic that enables diagnosis.

Results: In patients with early arthritis the sensitivity and specificity of the presence of RF was 69% and 95%, respectively, and of anti-CCP was 67% and 97%. In patients with early arthritis we observed significantly higher concentration of CEP-1 (65.8±111.6) than in the healthy group (2.0±0.0). In RF(+) RA patients we

observed higher concentration of antibodies a-Sa and CEP-1 than in other groups.

Antibodies a-Sa were positive in 69% of RF(+) RA patients, in 37% of RF(-) RA patients, in 26% of UA patients and in 10% of healthy people. In 8 aCCP (-) and RF(-) patients we observed the presence of a-Sa; 3 of them were diagnosed with RF(-) RA with and 5 with UA. Anti-CEP-1 antibodies were positive in 77% of RF(+) RA patients, in 56% of RF(-) RA patients, in 4,5% of UA patients, but their presence were not observed in the healthy people. In 8 aCCP (-) and RF (-) patients we observed positive anti-CEP-1 antibodies; 6 of them were diagnosed with RA, 2 of them with UA. Anti-CEP-1 antibodies were positive in 50% of RF(-) RA patients, in whom there was no aCCP nor RF, and only in 4,5% of UA patients.

In case of marking a-Car-P, positive values were present in: the group of RF(+) RA in 40% of patients, in patients diagnosed with RF(-) RA in 6%, in case of UA in 22% of patients. In patients with RF(+) RA, positive anti-CarP antibodies are present statistically significantly more often than in the group of RF (-) RA patients ($p < 0,05$).

In case of marking hnRNP/RA33 and AFA no statistically significant differences between RF(+) RA, RF(-) RA and UA in their occurrence were observed. In patients with arthritis no correlation between smoking and analysed autoantibodies was observed. In smokers higher CRP concentration and ESR values was observed.

Conclusions: Our results suggest that a-Sa and CEP-1 parameters allow to differentiate RF(+) RA, RF(-) RA and UA, but do not differentiate UA from RF(-) RA. Marking CEP-1 in patients with early arthritis may help in differentiation between RF(-) RA and UA. Marking CEP-1 and a-Sa may be useful in diagnosing early arthritis patients. The presence of Anti-CarP antibodies in UA patients is probably considerable risk factor in RA development. Smoking cessation may contribute to decrease RA activity.

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FRI0021

PREDICTORS OF RHEUMATOID ARTHRITIS DEVELOPMENT IN PATIENTS WITH EARLY UNDIFFERENTIATED ARTHRITIS: A 2-YEARS FOLLOW-UP STUDY

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Background: Early treatment of rheumatoid arthritis (RA) improves longterm outcomes⁽¹⁾. However, at the beginning of the disease, some patients with RA fall within undifferentiated arthritis (UA) patients. Several studies have shown that almost half of patients with UA may experience spontaneous remission⁽²⁾. So, in order to prevent overtreatment and poor outcomes, the identification of predictors of RA development is desirable.

Objectives: To determine the frequency of patients with UA evolving into RA after 2 years of follow-up and the factors contributing to predict this outcome.

Methods: A prospective analysis of an early arthritis cohort of 1377 patients from 1993 to 2017 was undertaken. For this study, 2 years follow-up data of patients who presented with UA were analysed. A detailed baseline assessment was completed including clinical features, physical examination and laboratory tests. Patients were stratified in two groups based on progression to RA (according to physician's diagnosis) or to another disease (non-RA). First, differences between groups were tested using chi-squared and Student-t tests in the univariate analysis. Second, multivariate logistic regression models were employed to investigate the association between possible predictive factors and RA development.

Results: A total of 471 UA patients were included for analysis. Mean age was 48.7±17.5 years, 352 (74.9%) were females, and mean symptoms duration was 13.9±13.9 weeks. After 2 years of follow-up, 93 (19.7%) of UA patients evolved into RA. Meanwhile, 175 (37.2%) remained undifferentiated and 203 (43.1%) developed into other musculoskeletal diseases. In the univariate analysis, the presence of rheumatoid factor (RF) and anti-citrullinated peptides antibodies (ACPA), tender and swollen joint count, duration of morning stiffness, smoking, symmetry and ESR values were significantly associated with RA development. In the multivariate analysis, RF (OR=5,899; 95% CI 1,795–19,382), ACPA (OR=123,238; 95% CI 29,353–517,410) and swollen joint count (OR=1,233; 95% CI 1,048–1,450), remained significantly associated with RA development (table 1).

Abstract FRI0021 – Table 1. Independent predictors of RA development based on logistic regression model

	Odds ratio	95% C.I.	
		Lower	Upper
Physician Global Assessment (0–100)	1016	,983	1051
28 Tender Joint Count	,949	,852	1057
28 Swollen Joint Count	1233	1048	1450
ESR(mm/h)	1018	,992	1044
Race	,633	,021	19 250
Smoking	,851	,223	3245
Symmetry	,568	,145	2225
RF(IU/mL)	5899	1795	19 382
ACPA(IU/mL)	1 23 238	29 353	5 17 410

Conclusions: Approximately, 1 out of 5 patients with UA evolves into RA after 2 years of follow-up. Swollen joint count, and the presence of rheumatoid factor (RF) and anti-citrullinated peptides antibodies (ACPA) are independent predictors for the development of RA, supporting the early DMARDs initiation in such patients.

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FRI0022

RAPID AND SUSTAINED REMISSION CONTRIBUTES TO IMPROVED PSYCHOSOCIAL OUTCOMES AFTER 1 YEAR OF TREATMENT IN PATIENTS WITH EARLY RHEUMATOID ARTHRITIS: DATA FROM THE CARERA TRIAL

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Background: The goal of early rheumatoid arthritis (RA) treatment is to reach remission as soon as possible, as this initial treatment response is a strong predictor of long-term clinical outcomes. Rapidly reaching remission is not only clinically meaningful, it also matters from the patient's perspective.¹ Yet, the influence of an initial response on patients' future psychosocial functioning remains understudied in early RA.

Objectives: To explore the association between the initial clinical response of patients with early RA and their psychosocial functioning after 1 year of treatment.

Methods: We included patients with early RA (disease duration ≤1 year) who started first-time treatment within the Care in early RA (CareRA) trial.² Based on the speed of response defined as the response at week 16, and the stability of response evaluated from week 16 onwards until week 52 of treatment, we created 4 profiles of initial clinical response relevant to patients: persistent responders, secondary failures, delayed responders and non-responders (table 1). Having a response was defined as a disease activity score (DAS28CRP) <2.6 indicating remission. Psychosocial functioning was operationalized using relevant subscales of the Short-form 36 (SF-36) and the Revised Illness Perception Questionnaire (IPQ-R) (table 2). We built multiple linear regression models for each psychosocial outcome separately adjusted for confounding variables. Imputation using the Expectation-Maximisation method was performed for missing SF-36 and IPQ-R scores (range 22.2%>23.1%) only at week 52.